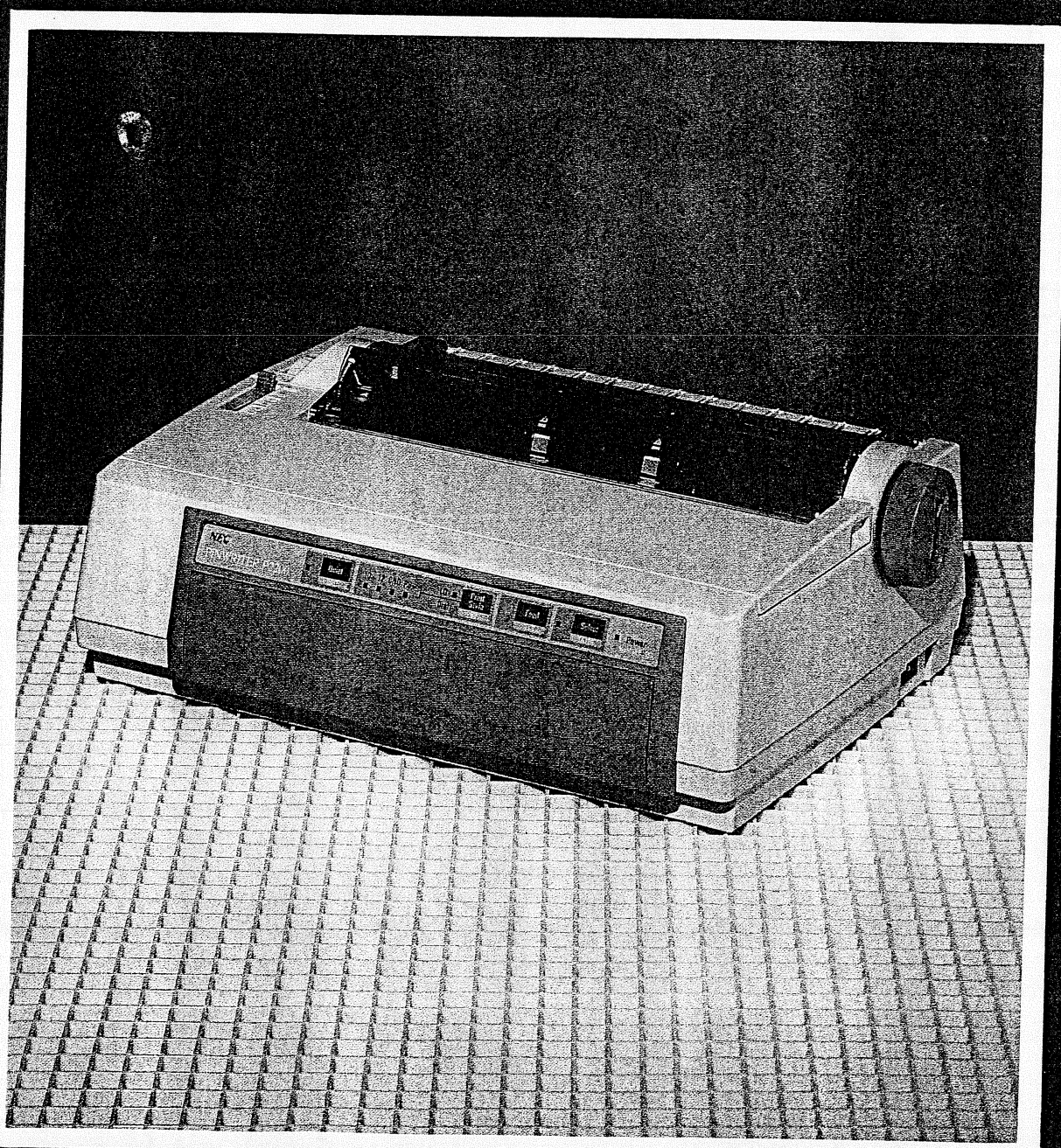
HOWARD W. SAMS & COMPANY CP54 09053

COMPUTERFACTS®
Technical Service Data

NEC®
MODEL PINWRITER P2200
PRINTER



FEATURES COMPLETE SCHEMATICS • PRELIMINARY SERVICE CHECKS • TROUBLESHOOTING TIPS • EASY-READ WAVEFORMS • REPLACEMENT PARTS LISTS • SEMICONDUCTOR CROSS-REFERENCE

NEC MODEL PINWRITER P2200

CP54

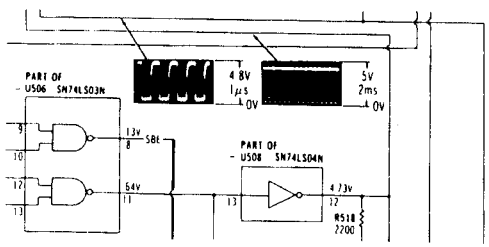
HOWARD W. SAMS & COMPANY

Remove staples and use cover for file folder.

COMPUTERFACTS put easy to use, informative technical data right at your fingertips. Each edition includes specific service information on the individual component, along with some overall troubleshooting hints.

The following information is just a sample of the many valuable time saving features contained in this exclusive Sams COMPUTERFACTS publication:

- Preliminary Service Checks section is an easy to use, step by step guide for the experienced technician or hobbyist, and even beginners.
- SAMS famous industry accepted standardized notation schematics containing CIRCUITRACE® , GRIDTRACE™, waveforms, voltages and stage identification.

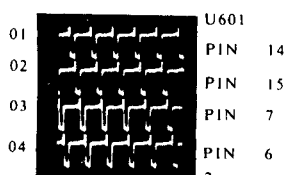


- Step by Step Troubleshooting guides the technician through the necessary procedures to quickly locate the problem.

TROUBLESHOOTING

MICROPROCESSOR CHIP (CPU) OPERATION

Verify the processor is functioning by checking the signals on the address lines (pins 10 thru 24 of IC U600) and the data lines (pins 41 thru 56) using a logic probe or a scope if a logic probe is used, refer to the "Logic Chart" for the correct readings. If a scope is used, the waveforms on the address lines (except pins 22 and 23 which have no signal in Power Up mode) should be similar to Figure 1. The waveforms on the data lines should be similar to Figure 2.

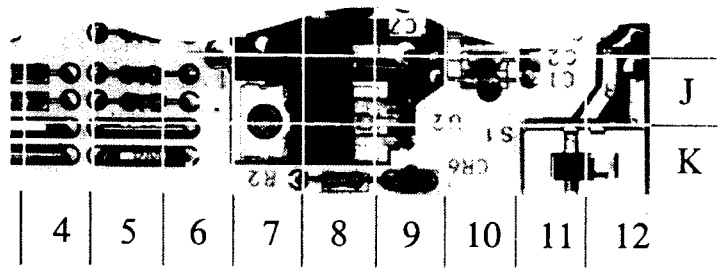


- Logic Chart containing logic probe readings to isolate defective circuitry and components.

LOGIC

PIN NO	IC U100	PIN NO	IC U100	PIN NO	IC U102	IC U103	IC U104	IC U105	IC U106	IC U107	IC U108	IC U109
1	P	21	P	1	1.	1.	L	L	1	1	1	1
2	P	22	P	2	P	P	P	P	P	P	P	P
3	P	23	P	3	H	H	H	H	H	H	H	H

- Quick Component Location using the SAMS exclusive GRIDTRACE, CIRCUITRACE, and component photographs.



- Complete Components Parts List in an easy to use format with field replacements shown when possible. SAMS unique semiconductor, chip and IC cross-reference gives you many replacements to choose from and is available at your Electronic Distributor.

SEMICONDUCTORS (Select replacement for best results)

			REPLACEMENT DATA				
ITEM No.	TYPE No.	MFGR. Part No.	ECG Part No.	NTE Part No.	RCA Part No.	ZENITH Part No.	NOTES
D102	1SS53	1149-2576	ECG519	NTE519	SK9091/177	103-131	
D103	2N60FM	1149-2527	ECG109	NTE109	SK3088	103-Z9001	
D201	1N4004GP	1201-4205	ECG116	NTE116	SK3312	212-76-02	
D501 thru D503	1SS53	1149-2576	ECG519	NTE519	SK9091/177	103-131	

COMPUTERFACTS and CIRCUITRACE are registered trademarks of Howard W. Sams & Co., a division of Macmillan, Inc.
GRIDTRACE is a trademark of Howard W. Sams & Co.
NEC is a registered trademark of NEC Information Systems.

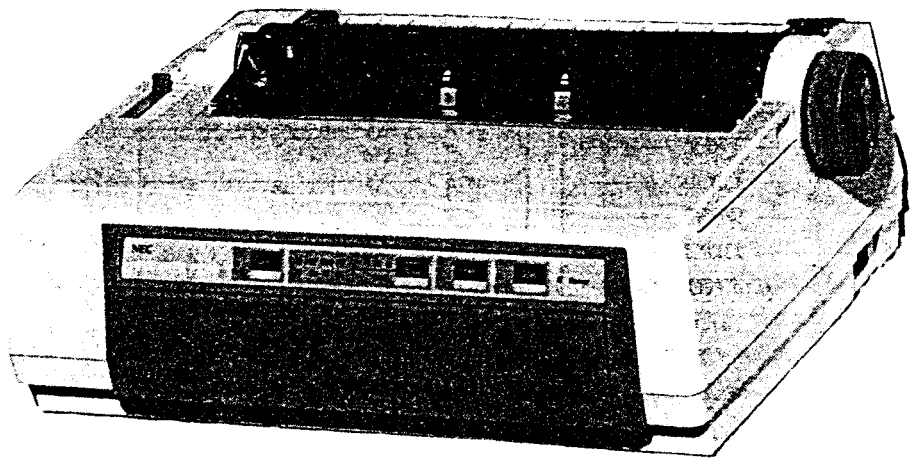
To order, or for more information see your Sams Distributor, or telephone 800-428-SAMS.

HOWARD W. SAMS & COMPANY
A Division of Macmillan, Inc.
4300 West 62nd Street
Indianapolis, Indiana 46268 USA

CP54
09053

0 81262 09053 4
ISBN: 0-672-09053-8

NEC MODEL PINWRITER P2200 CP54



CP54 MODEL PINWRITER P2200 NEC

SAFETY PRECAUTIONS

See Page 6.

PRELIMINARY SERVICE CHECKS

ENCLOSED

INDEX

	Page
Block Diagram	7
Computer Self-Tests and Diagnostics	14
Disassembly Instructions	12
General Operating Instructions	11
GridTrace Location Guide	
Mother Board	8
Power Supply Board	22
IC Pinouts and Terminal Guides	29
Line Definitions	13
Logic Charts	30,31,32
Memory Settings	16
Miscellaneous Adjustments	13

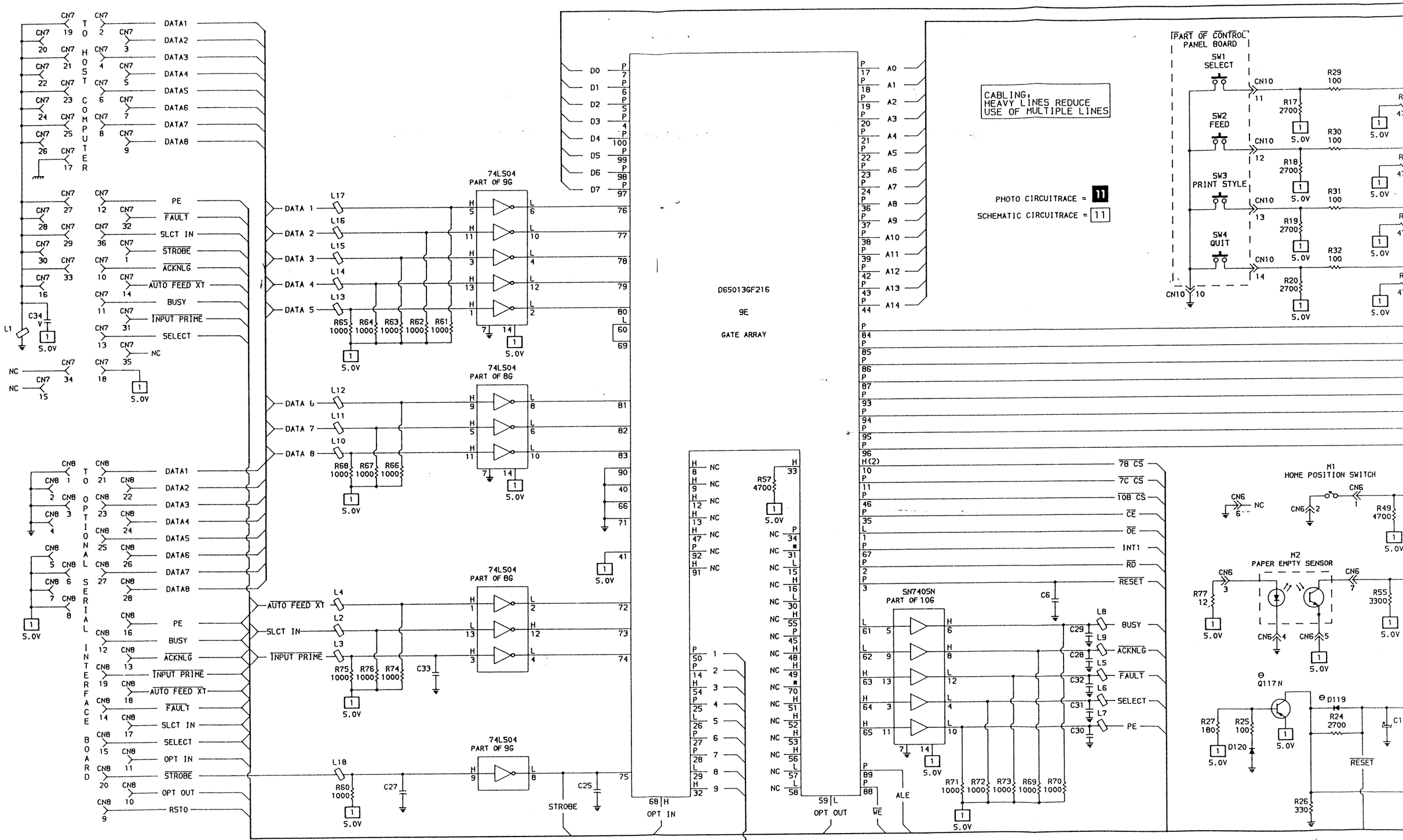
	Page
Parts List	17 thru 21
Photos	
Chassis-Board View	32
Chassis Overall View	25
Control Panel Board	24
Mother Board	3,9,10,27,28,34
Power Supply Board	22,23
Safety Precautions	6
Schematics	2,4,5,33,35,36,37
Schematic Notes	26
Test Equipment	14
Troubleshooting	15

SAMS™ Howard W. Sams & Co.
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co. as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co. by the manufacturers of the particular type of replacement part listed. 89CP19076 DATE 10-89

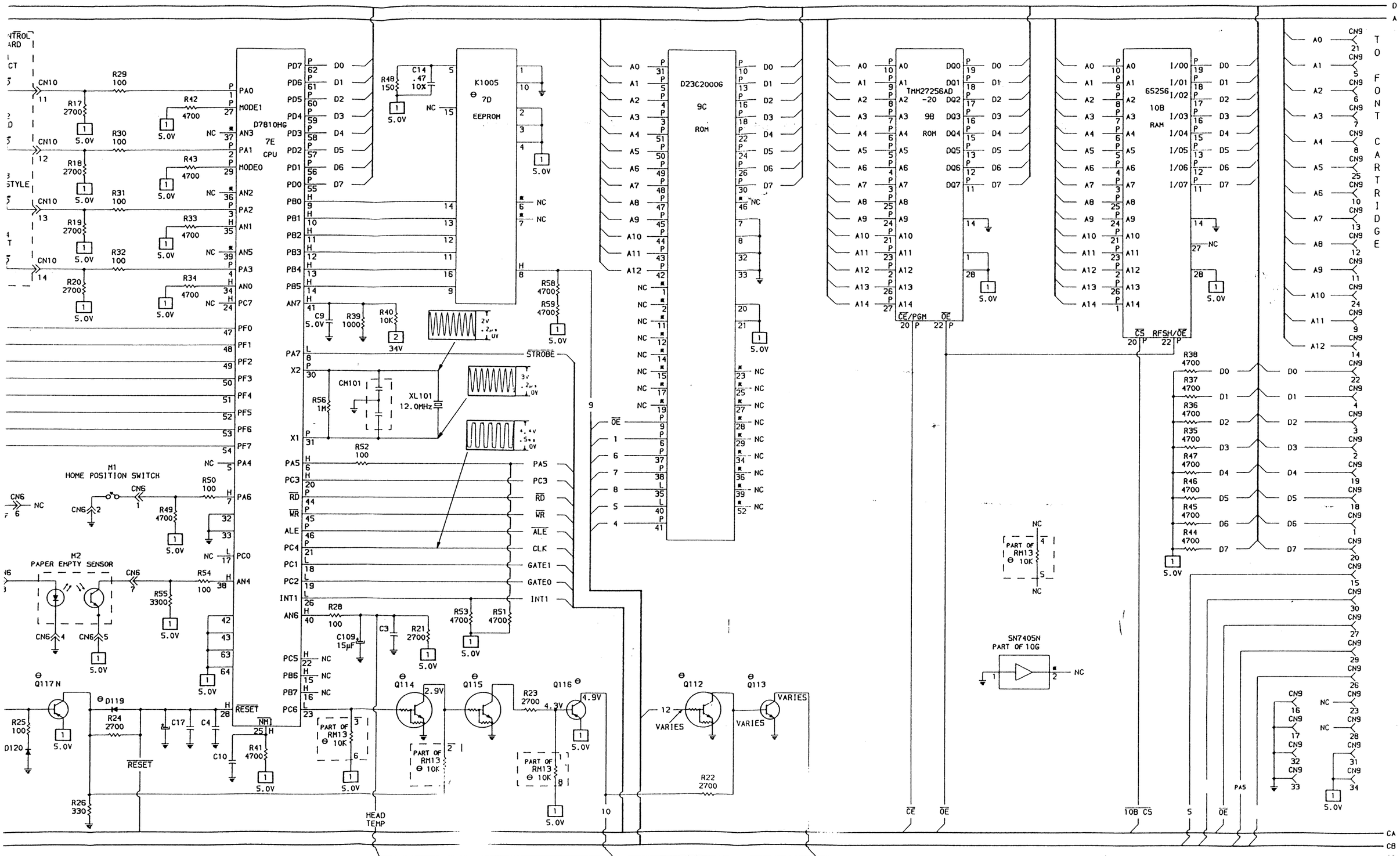
Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein.

© 1989 Howard W. Sams & Co.
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.
Printed in U.S. of America



A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE™

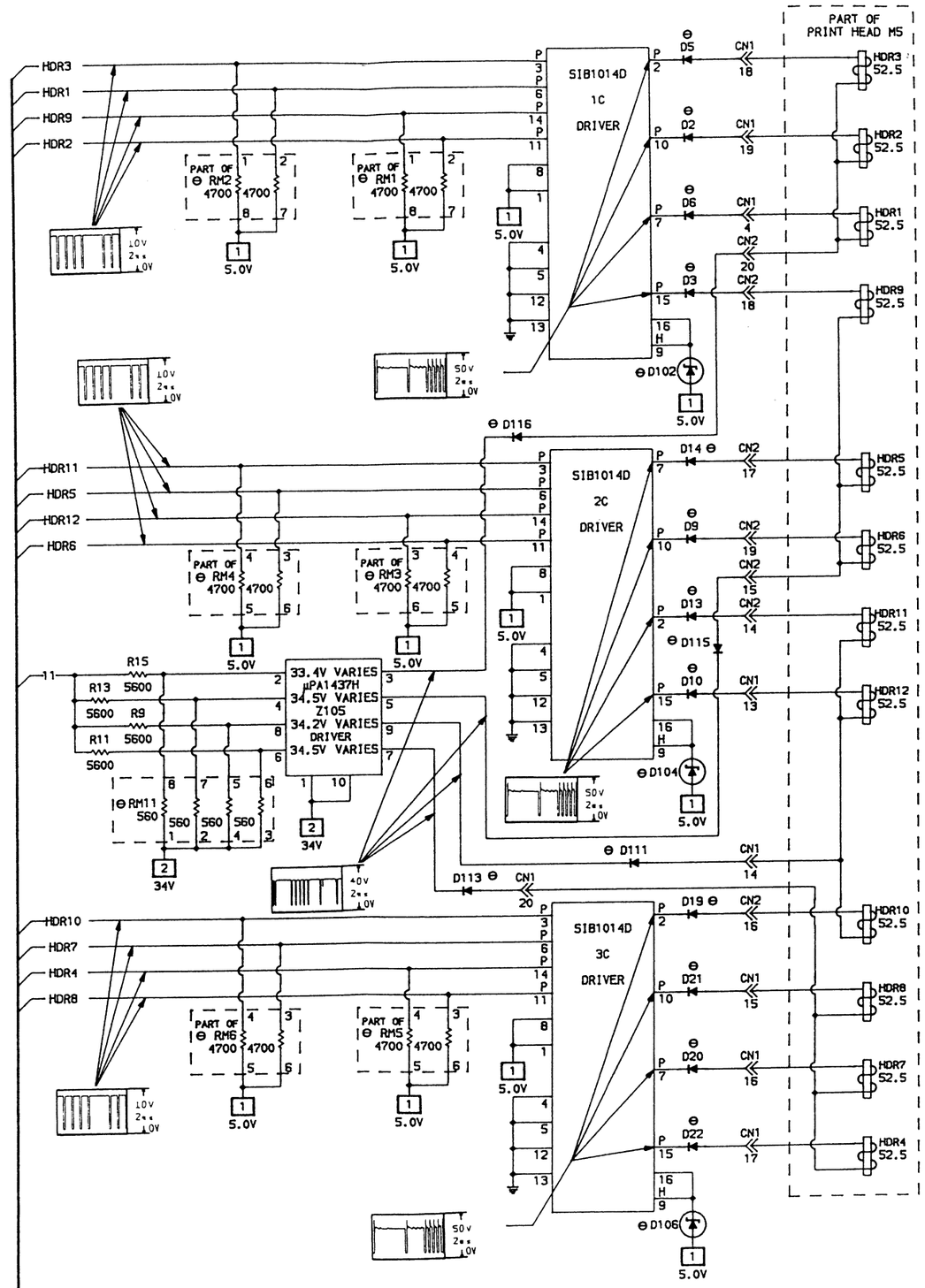
© Howard W. Sams & Co., Inc. 1989



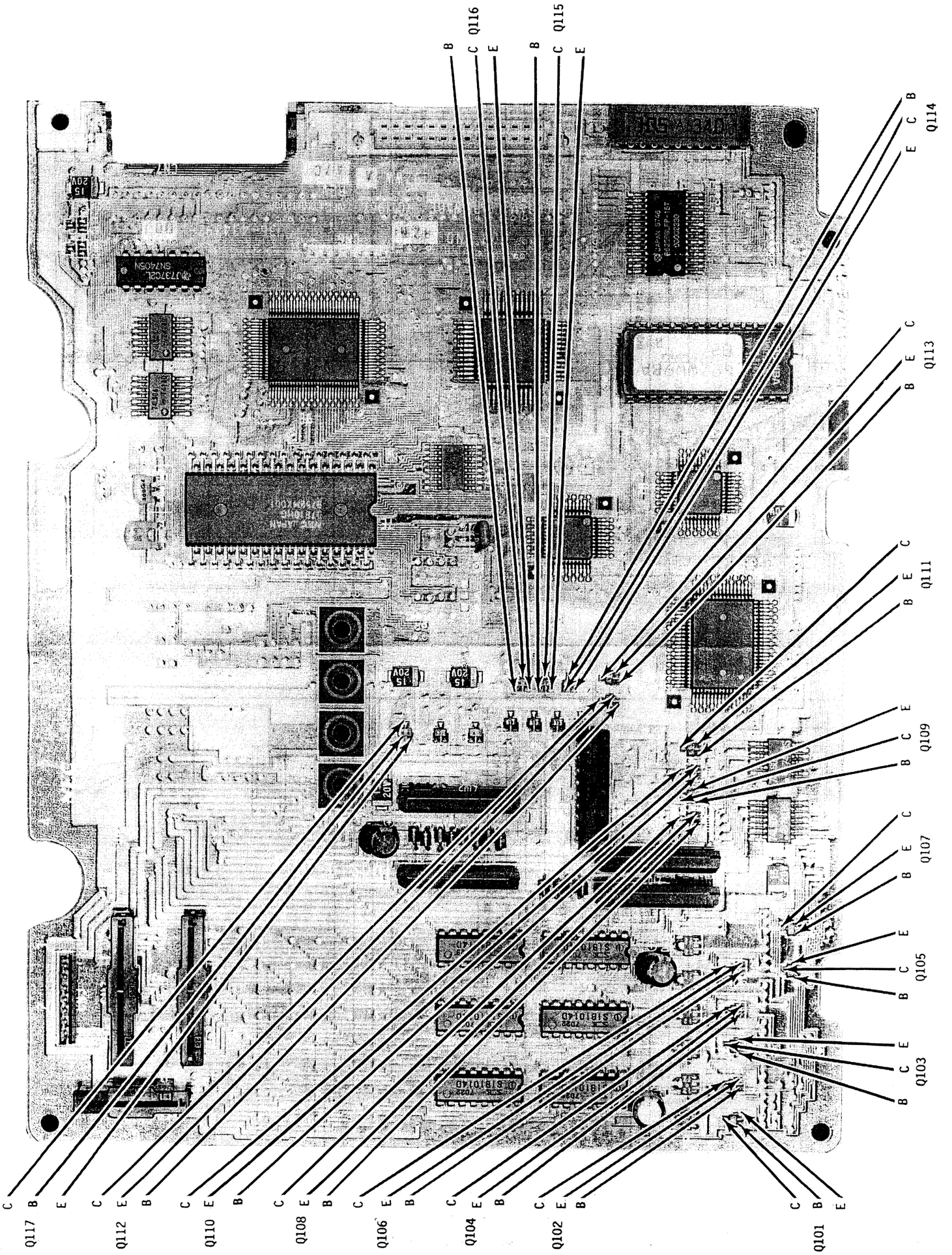
TO FONT CARTRIDGE

NEC

MODEL PINWRITER P2200



© Howard W. Sams & Co., Inc. 1989



MOTHER BOARD 3

MOTHER BOARD
34

SAFETY PRECAUTIONS

1. Use an isolation transformer for servicing.
2. Maintain AC line voltage at rated input.
3. Remove AC power from the Printer before servicing or installing electrostatically sensitive devices. Examples of typical ES devices are integrated circuits and semiconductor "chip" components.
4. Use extreme caution when handling the printed circuit boards. Some semiconductor devices can be damaged easily by static electricity. Drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available discharging wrist strap device. This should be removed prior to applying power to the unit under test.
5. Use a grounded-tip, low voltage soldering iron.
6. Use an isolation (times 10) probe on scope.
7. Do not remove or install board, mechanical or electrical parts or other peripherals with Printer AC power On.
8. Do not use freon-propelled sprays. These can generate electrical charges sufficient to damage semiconductor devices.
9. This Printer is equipped with a grounded three-pronged AC plug. This plug must fit into a grounded AC power outlet. Do not defeat the AC plug safety feature.
10. Periodically examine the AC power cord for damaged or cracked insulation.
11. The Printer cabinet is equipped with vents to prevent heat build-up. Never block, cover or obstruct these vents.
12. Instructions should be given, especially to children, that objects should not be dropped or pushed into the vents of the cabinet. This could cause shock or equipment damage.
13. Never expose the Printer to water. If exposed to water, turn the unit Off. Do not place the Printer near possible water sources.
14. Never leave the Printer unattended or plugged into the AC outlet for long periods of time. Remove AC plug from AC outlet during lightning storms.
15. Do not allow anything to rest on AC power cord.
16. Unplug AC power cord from outlet before cleaning Printer.
17. Never use liquids or aerosols directly on the Printer. Spray on cloth and then apply to the Printer cabinet. Make sure the Printer is disconnected from the AC power line.

LOGIC CHARTS (Continued)

PIN NO.	IC 1C	IC 1D	IC 2C	IC 2D	IC 3C	IC 3D	IC 4A	IC 5D
1	H	H	H	H	H	H	H(3)	P
2	P	P	P	P	P	P	L(3)	P
3	P	P	P	P	P	P	L(3)	P
4	L	L	L	L	L	L	H(3)	P
5	L	L	L	L	L	L	H(3)	P
6	P	P	P	P	P	P	L(3)	L
7	P	P	P	P	P	P	L	L
8	H	H	H	H	H	H	L(3)	L
9	H	H	H	H	H	H	H(3)	P
10	P	P	P	P	P	P	H(3)	P
11	P	P	P	P	P	P	L(3)	P
12	L	L	L	L	L	L	L(3)	P
13	L	L	L	L	L	L	H(3)	P
14	P	P	P	P	P	P	H	H
15	P	P	P	P	P	P		
16	H	H	H	H	H	H		

PIN NO.	IC 6A	PIN NO.	IC 6A	PIN NO.	IC 6A	PIN NO.	IC 6A
1	P	21	H	41	P	61	P
2	H	22	L	42	H	62	L
3	L	23	H	43	L	63	H
4	P	24	H	44	P	64	P
5	P	25	H	45	H	65	P
6	P	26	H	46	P	66	P
7	H(20)	27	H	47	P	67	P
8	L(20)	28	H	48	H	68	P
9	H(20)	29	P	49	P	69	P
10	H(20)	30	P	50	P	70	P
11	H(20)	31	P	51	P	71	P
12	L(20)	32	P	52	H(3)	72	P
13	H(20)	33	L	53	P	73	P
14	P(21)	34	P	54	L(3)	74	P
15	P	35	P	55	L(3)	75	P
16	P	36	P	56	H(3)	76	P
17	P	37	P	57	H(3)	77	P
18	P	38	P	58	P	78	P
19	H	39	P	59	P	79	P
20	H	40	P	60	P	80	P

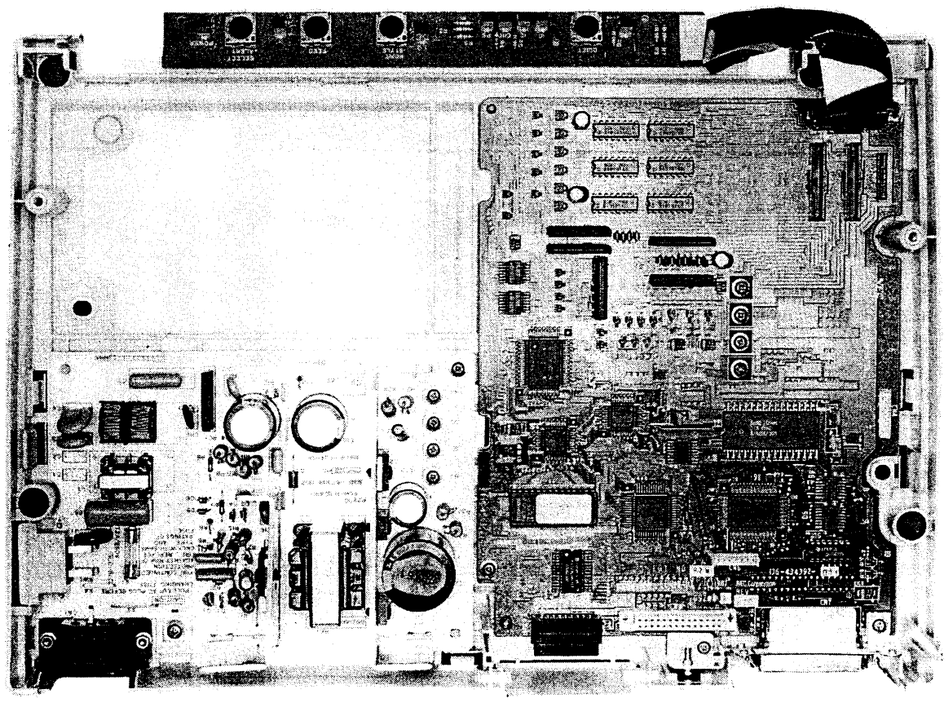
PIN NO.	IC 7B	PIN NO.	IC 7B	PIN NO.	IC 7B
1	*	21	*	41	P
2	*	27	*	42	P
3	*	23	*	43	P
4	P	24	P	44	*
5	P	25	P(21)		
6	*	26	P		
7	P	27	P		
8	P	28	*		
9	P	29	P		
10	H(3)	30	P		
11	*	31	P		
12	*	32	P		
13	*	33	*		
14	*	34	*		
15	P	35	*		
16	L	36	*		
17	L	37	P		
18	P	38	H		
19	P	39	*		
20	*	40	P		

LOGIC CHARTS (Continued)

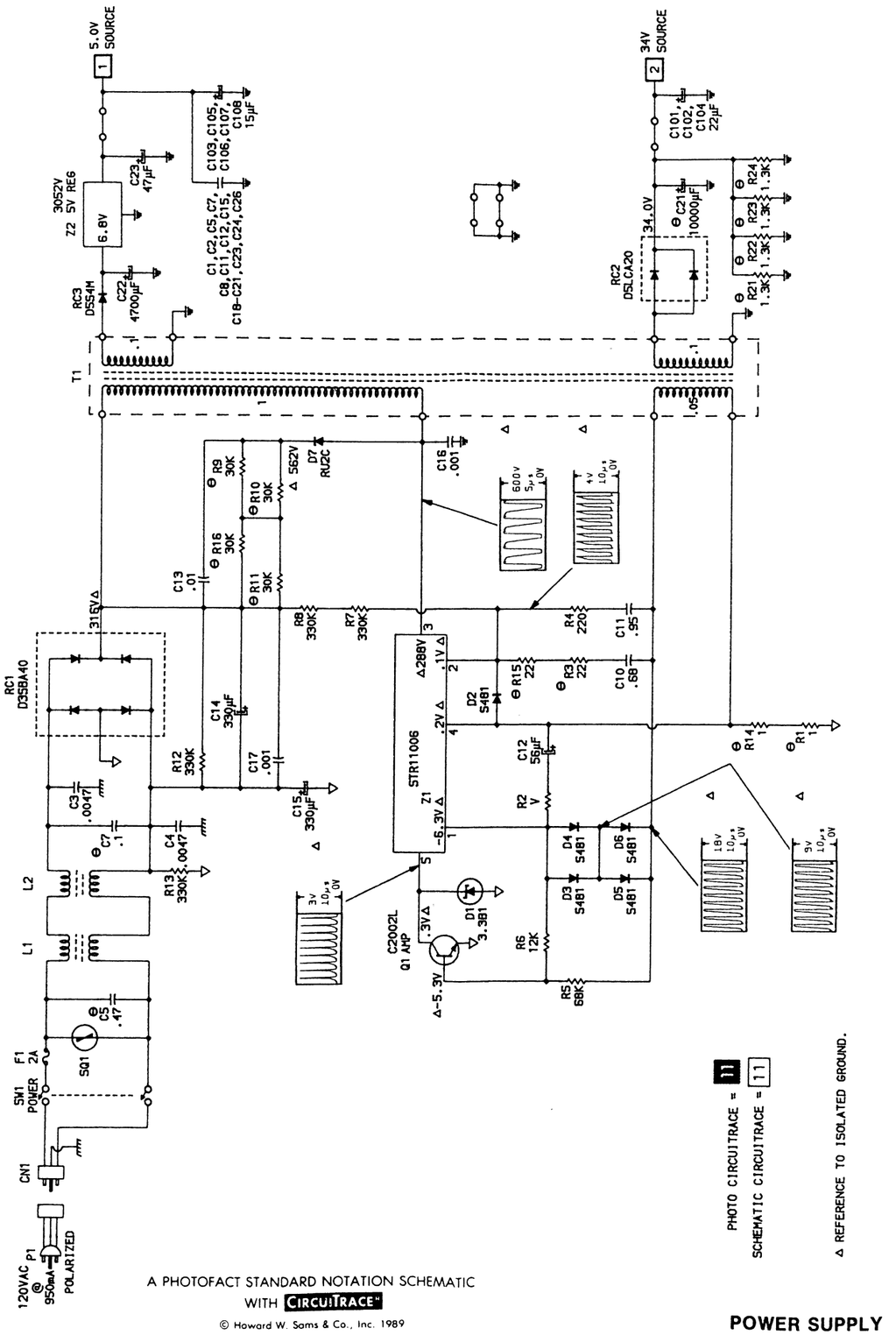
PIN NO.	IC 9E	PIN NO.	IC 9E	PIN NO.	IC 9E	PIN NO.	IC 9E	PIN NO.	IC 9E
1	P	21	P	41	H	61	L	81	L
2	P	22	P	42	P	62	L	82	L
3	H	23	P	43	P	63	H	83	L
4	P	24	P	44	P	64	H	84	P
5	P	25	P	45	P	65	H	85	P
6	P	26	L	46	P	66	L	86	P
7	P	27	P	47	H	67	L	87	P
8	H	28	P	48	H	68	H	88	P
9	H	29	L	49	H	69	L	89	P
10	H(3)	30	L	50	P	70	*	90	L
11	P	31	*	51	H	71	L	91	H
12	H	32	H	52	H	72	L	92	P
13	H	33	H	53	H	73	H	93	P
14	P	34	P	54	H	74	L	94	P
15	L	35	P	55	H	75	L	95	P
16	H	36	P	56	H	76	L	96	P
17	P	37	P	57	L	77	L	97	P
18	P	38	P	58	L	78	L	98	P
19	P	39	P	59	L	79	L	99	P
20	P	40	L	60	L	80	L	100	P

PIN NO.	IC 9G	IC 10B	PIN NO.	IC 10B
1	H	P	21	P
2	L	P	22	P
3	H	P	23	P
4	L	P	24	P
5	H	P	25	P
6	L	P	26	P
7	L	P	27	P
8	L	P	28	H
9	H	P		
10	L	P		
11	H	P		
12	L	P		
13	H	P		
14	H	L		
15		P		
16		P		
17		P		
18		P		
19		P		
20		P		

PIN NO.	IC 10G
1	L
2	*
3	H
4	L
5	L
6	H
7	L
8	H
9	L
10	L
11	H
12	L
13	H
14	H



CHASSIS-BOARD VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE™

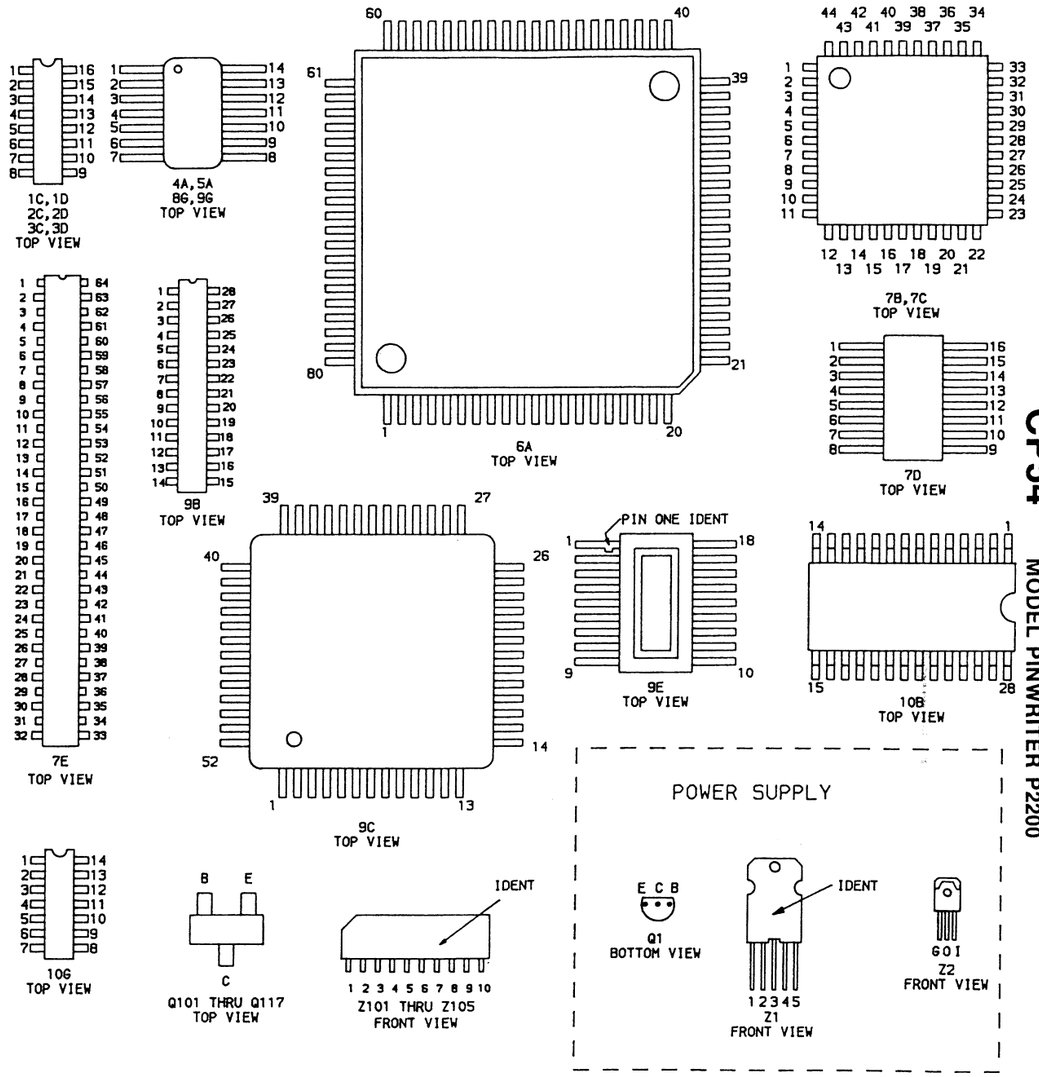
© Howard W. Sams & Co., Inc. 1989

POWER SUPPLY

MOTHER BOARD (BOTTOM VIEW)-GridTrace LOCATION GUIDE

C1	R-18	R3	O-16	R76	I-3
C2	R-16	R4	O-15	R77	H-3
C3	D-16	R5	M-15	RM1	Q-24
C4	K-14	R6	M-15	RM2	Q-23
C5	Q-13	R7	L-15	RM3	Q-22
C6	P-13	R8	L-15	RM4	Q-21
C7	H-12	R9	L-16	RM5	Q-20
C8	F-12	R10	K-16	RM6	Q-20
C9	F-12	R11	K-16	RM7	P-17
C10	D-12	R12	K-16	RM8	O-17
C11	P-9	R13	J-16	RM9	M-17
C12	M-10	R14	J-16	RM10	P-16
C15	J-10	R15	J-16	RM11	M-16
C17	E-9	R16	I-16	RM12	P-15
C18	R-6	R17	F-16	RM13	K-13
C19	L-6	R18	F-16	RM14	N-12
C20	G-6	R19	E-16		
C21	F-6	R20	E-16		
C23	D-8	R21	D-16		
C24	D-6	R22	N-14		
C25	E-5	R23	L-14		
C26	Q-4	R24	J-14		
C27	M-1	R25	J-14		
C28	L-2	R26	J-14		
C29	L-2	R27	J-14		
C30	K-2	R28	D-15		
C31	K-2	R29	G-13		
C32	K-2	R30	F-13		
C33	J-2	R31	F-13		
C34	G-1	R32	F-13		
D1	I-24	R33	E-13		
D2	H-24	R34	E-13		
D3	F-24	R35	J-12		
D4	I-24	R36	J-12		
D5	H-24	R37	J-12		
D6	F-24	R38	J-12		
D7	I-23	R39	E-12		
D9	F-23	R40	E-12		
D10	I-22	R41	D-12		
D11	H-22	R42	D-12		
D12	F-22	R43	C-12		
D13	I-22	R44	J-11		
D14	H-22	R45	J-11		
D15	F-22	R46	J-11		
D16	I-21	R47	J-11		
D17	H-21	R48	J-11		
D18	F-21	R49	H-9		
D19	I-21	R50	H-9		
D20	H-21	R51	G-9		
D21	F-21	R52	G-9		
D22	I-20	R53	F-9		
D23	H-20	R54	E-10		
D24	F-20	R55	E-10		
L1	G-3	R56	C-8		
L2	G-3	R57	I-7		
L3	G-3	R58	J-4		
L4	F-3	R59	J-4		
L5	F-3	R60	M-3		
L6	F-3	R61	M-3		
L7	E-3	R62	M-3		
L8	E-3	R63	L-3		
L9	E-3	R64	L-3		
L10	E-3	R65	L-3		
L11	D-3	R66	K-3		
L12	D-3	R67	K-3		
L13	D-3	R68	K-3		
L14	D-3	R69	K-3		
L15	C-3	R70	J-3		
L16	C-3	R71	J-3		
L17	C-3	R72	J-3		
L18	B-3	R73	J-3		
R1	O-16	R74	I-3		
R2	O-16	R75	I-3		

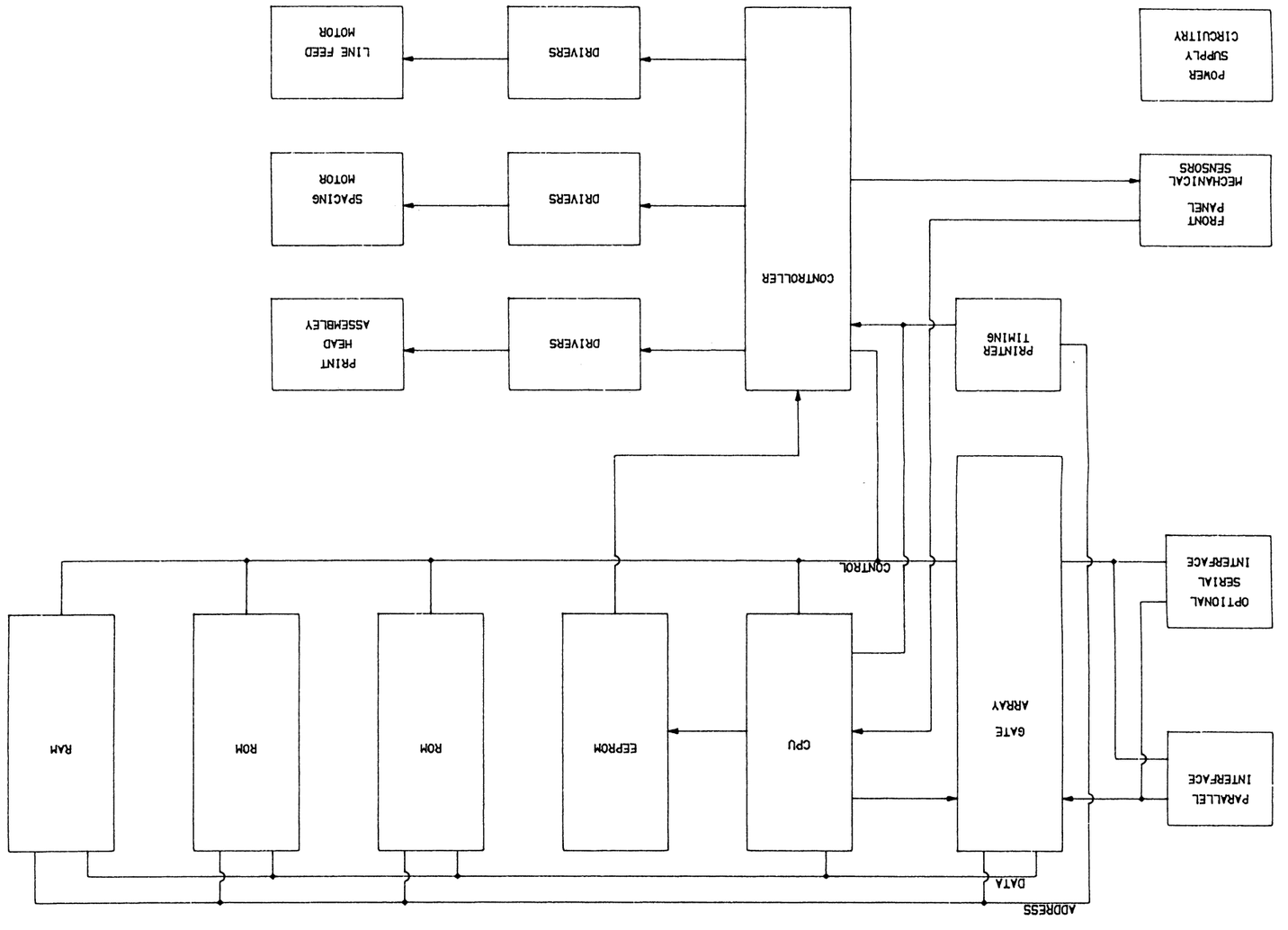
IC PINOUTS AND TERMINAL GUIDES



CP54

NEC MODEL PINWRITER P2200

BLOCK DIAGRAM



LOGIC CHARTS

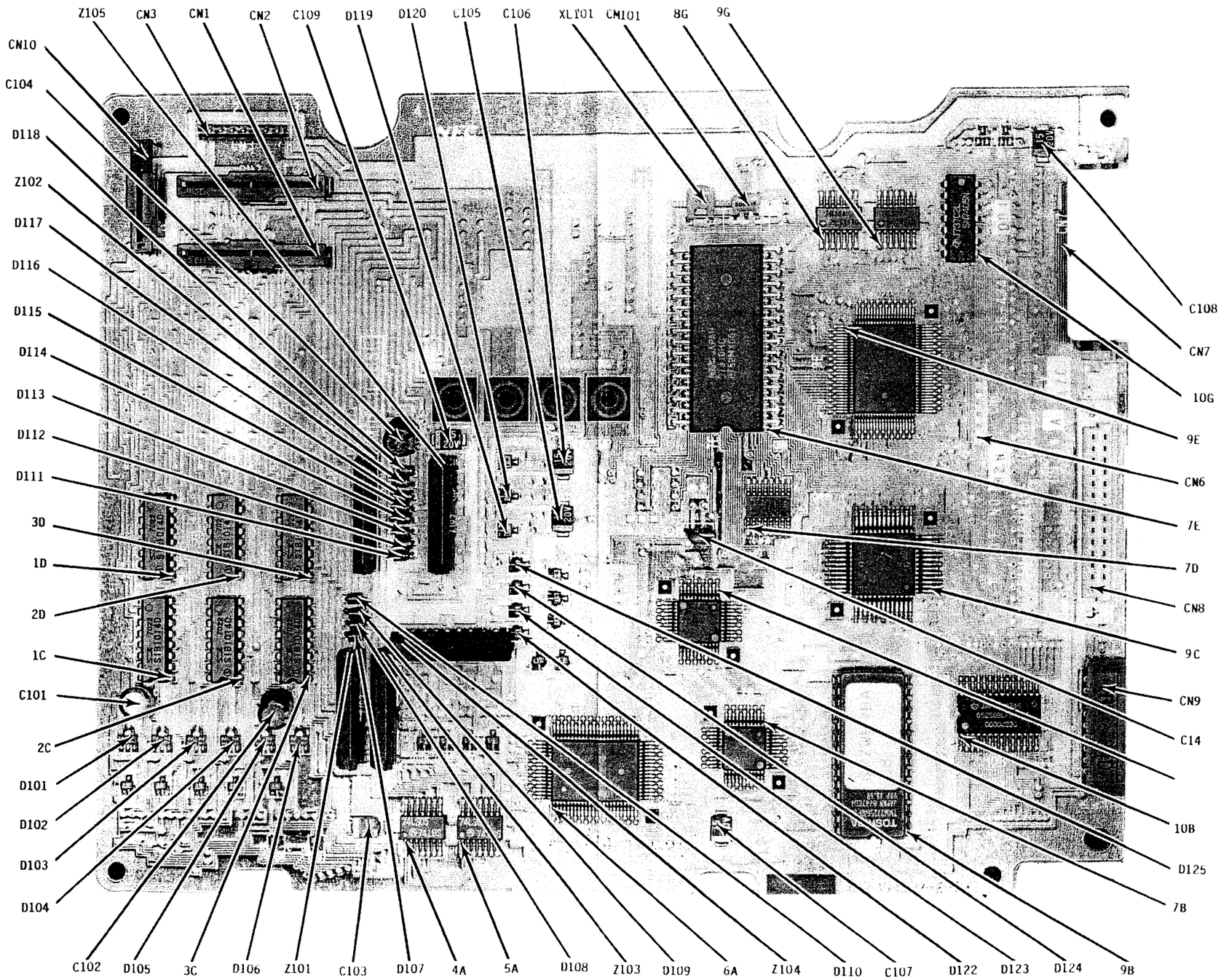
PIN NO.	IC 7C	PIN NO.	IC 7C	PIN NO.	IC 7C
1	*	21	*	41	P
2	*	22	*	42	P
3	*	23	*	43	P
4	P	24	P	44	*
5	P	25	P		
6	*	26	P		
7	P	27	P		
8	P	28	*		
9	*	29	P		
10	H	30	P		
11	*	31	P		
12	*	32	P		
13	*	33	*		
14	*	34	*		
15	*	35	*		
16	L	36	*		
17	L	37	P		
18	P	38	H		
19	P	39	*		
20	*	40	P		

PIN NO.	IC 8G	IC 9B	PIN NO.	IC 9B
1	H	H	21	P
2	L	P	22	P
3	H	P	23	P
4	L	P	24	P
5	H	P	25	P
6	L	P	26	P
7	L	P	27	P
8	L	P	28	H
9	H	P		
10	L	P		
11	H	P		
12	H	P		
13	L	P		
14	H	L		
15		P		
16		P		
17		P		
18		P		
19		P		
20		P		

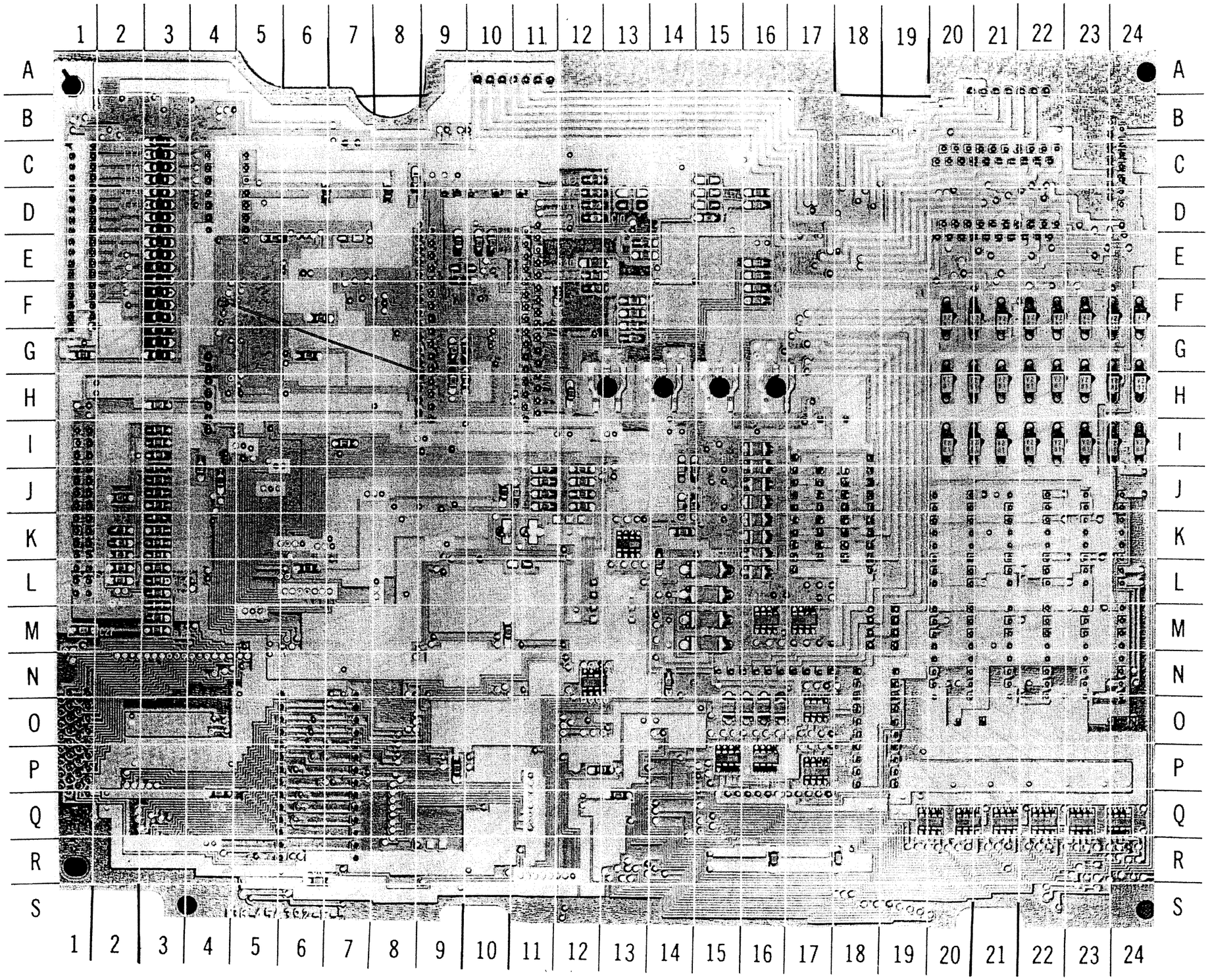
PIN NO.	IC 7D	IC 7E	PIN NO.	IC 7E	PIN NO.	IC 7E
1	L	P	21	P	41	H
2	H	P	22	H	42	H
3	H	P	23	L	43	H
4	H	P	24	H	44	P
5	H	*	25	H	45	P
6	*	H	26	L	46	P
7	*	H	27	P	47	P
8	H	L	28	H	48	P
9	H	H	29	P	49	P
10	L	H	30	P	50	P
11	H	H	31	P	51	P
12	H	H	32	L	52	P
13	H	H	33	L	53	P
14	H	H	34	H	54	P
15	H	H	35	H	55	P
16	H	H	36	*	56	P
17		L	37	*	57	P
18		L	38	H	58	P
19		L	39	*	59	P
20		H	40	H	60	P

PIN NO.	IC 9C	PIN NO.	IC 9C
1	*	21	H
2	*	32	P
3	P	23	*
4	P	24	P
5	P	25	*
6	P	26	P
7	L	27	*
8	L	28	*
9	P	29	*
10	P	30	P
11	*	31	P
12	*	32	L
13	P	33	L
14	*	34	*
15	*	35	L
16	P	36	*
17	*	37	P
18	P	38	P
19	*	39	*
20	H	40	L

PIN NO.	IC 9C	PIN NO.	IC 9C
41	P	61	P
42	H	62	P
43	L	63	H
44	H	64	H
45	*		
46	*		
47	P		
48	P		
49	P		
50	P		
51	*		
52	*		



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED



MOTHER BOARD (BOTTOM VIEW)

A Howard W. Sams GRIDTRACE™ Photo

MOTHER BOARD (BOTTOM VIEW)

DISASSEMBLY INSTRUCTIONS

TOP AND MIDDLE COVER REMOVAL

Open top cover by lifting it up and out from the printer. Pull off the feed knob, loosen two screws on the middle cover and lift off the middle cover.

CONTROL PANEL ASSEMBLY REMOVAL

Remove top cover and middle cover, loosen the screw that secures the cable shield. Pull up both ends of connector lock CN10, and remove cable out from connector. Lift off control panel assembly while pushing backward at both ends of the panel assembly.

PRINT HEAD REMOVAL

Remove top cover and remove ribbon cartridge. Move the carriage assembly to the center. Press down on the top right-hand corner of the clamp lever, unlock the clamp lever by pulling it to the right. Lift up print head. Pull up both ends of the connector locks CN1 and CN2. Remove cables from the unlocked connectors. Release cables from the unlocked connectors. Release cables from the clamps on the paper guide. Use a screwdriver blade and press the two locking tabs out as far as possible to release the connector from the carriage and lift the connector out of the carriage assembly. Remove card guide from Print Head, pull the tag piece of the card guide on the bottom of the Print Head to release the card guide from the position pins. Pull the card guide from the front of the Print Head.

MECHANICAL ASSEMBLY REMOVAL

Pull up connector locks CN1 and CN2. Remove the cables from the unlocked connectors. Disconnect connectors CN3, CN4 and CN6 from the Mother Board. Press the two locking tabs outward to release the mechanical assembly from the base. Lift the mechanical assembly out of the printer.

LINE FEED MOTOR ASSEMBLY REMOVAL

Remove the top and middle cover, remove the tractor dial. Disconnect connector CN4 from the Mother Board. Remove the screw that secures the Line Feed Motor. Unlock two locking tabs and remove the line feed assembly by sliding it outward.

CARRIAGE ASSEMBLY REMOVAL

Remove the top and middle covers, remove the Print Head. Remove the cover of the left gear pulley. While pushing the tension arm outward, remove the spacing belt from the left gear pulley. Remove the spacing belt from the driven pulley on the tension arm. Remove two mounting screws securing the front stay, you may have to remove the clamp bracket. Lift up the front stay, pull the copy control lever upward. Lift the guide shaft out of the printer while sliding it to the right. Remove the guide shaft from carriage assembly. Remove the carriage assembly.

CARRIAGE MOTOR ASSEMBLY REMOVAL

Remove the mechanical assembly, remove the spacing belt from the left gear pulley. (See Carriage Assembly Removal). Carefully pull the carriage motor assembly to the left out of the mechanical assembly.

PIN FEEDER ASSEMBLY REMOVAL

Remove the middle cover and the Line Feed Assembly. Pull out the right and the left tractor assemblies. Use the edge of a flat narrow screw driver to release the right and left tractor bushings from the base frame. Remove the Pin Feeder Assembly by lifting it straight up and out of the Mechanical Assembly.

PLATEN ASSEMBLY REMOVAL

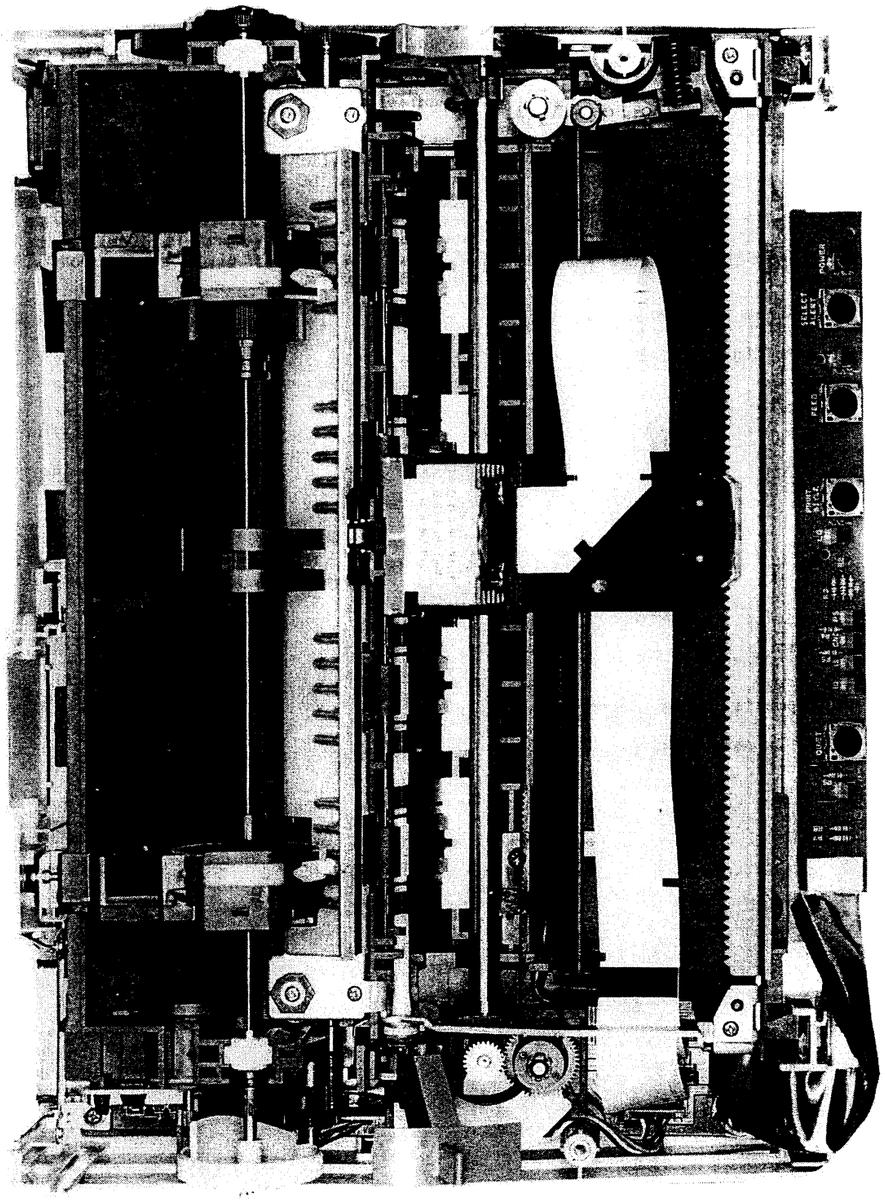
Remove the middle cover and the Print Head. Remove the clamp bracket by removing two mounting screws. Remove the Pin Feeder Assembly. Remove the mounting screws at both ends of the platen. Remove the platen from the frame by lifting the front side of the platen. Adjust the Print Head gap after replacing the platen.

MOTHER BOARD PCB ASSEMBLY REMOVAL

Remove middle cover, control panel assembly and mechanism unit. Remove four connector screws. Remove four attaching screws. Lift off the Mother Board PCB assembly.

POWER SUPPLY PCB ASSEMBLY REMOVAL

Remove middle cover, control panel assembly and mechanism unit. Remove four connector screws, remove two mounting screws and lift off power supply PCB assembly.



CHASSIS - OVERALL VIEW

SCHEMATIC NOTES

—▬— Circuitry not used in some versions
--- Circuitry used in some versions
• See parts list
⏚ Ground
Chassis
▽ Common tie point

Waveforms and voltages taken from ground, unless noted otherwise.

Item numbers in rectangles appear in the alignment/adjustment instructions.

Resistors are 1/2W or less, 5% unless noted.

Value in ( ) used in some versions.

Measurements with switching as shown, unless noted.

Supply voltage maintained as shown at input.

Voltages measured with digital meter.

Logic Probe Display
L = Low
H = High
P = Pulse
* = Open (no lights On)

Controls adjusted for normal operation.

Terminal identification may not be found on unit.

Capacitors are 50 volts or less, 5% unless noted.

Electrolytic Capacitors are 50 volts or less, 5% unless noted.

Waveforms taken with triggered scope and Sweep/Time switch in Calibrate position, scope input set for DC coupling on 0 reference voltage waveforms. Switch to AC input to view waveforms after DC reference is measured when necessary. Each waveform is 10cm. width with DC reference voltage given at the bottom line of each waveform.

Logic Probe Indicates:

(3) P during Line Feed.
(20) Change to opposite state according to LED On/Off.
(21) L when printer is not printing.

GENERAL OPERATING INSTRUCTIONS

SELECT BUTTON

Selects On-Line/Off-Line operation and suspends printing until pushed again to resume printing. If pressed and held while turning power On, the printer will print current memory switch settings.

FEED BUTTON

Activates Line Feed operation when printer is in Off-Line mode, advances the paper one line. If the button is held down the printer will perform Form Feed. It will advance the paper to first print line if a sheet feeder is used. It will initiate the Auto Load feature if a push tractor feeder is used. If pressed and held while turning power On the printer will perform normal mode self-test. In memory set mode, the Feed Button will change the menu or the settings.

PRINT STYLE BUTTON

Selects the print mode, Letter Quality or Draft, and selects the pitch, 10, 12, CND or PS. If Print Style Button is pressed and held while power is turned On the printer will perform all mode self-test. In memory set mode the Print Style Button advances the program to the next selection.

QUIET BUTTON

Selects between Quiet mode and Normal mode. If pressed and held down while power is turned On printer will perform Hex dump. In memory set mode, Quiet Button saves the memory switch changes and exits memory set mode.

LED ERROR CODES

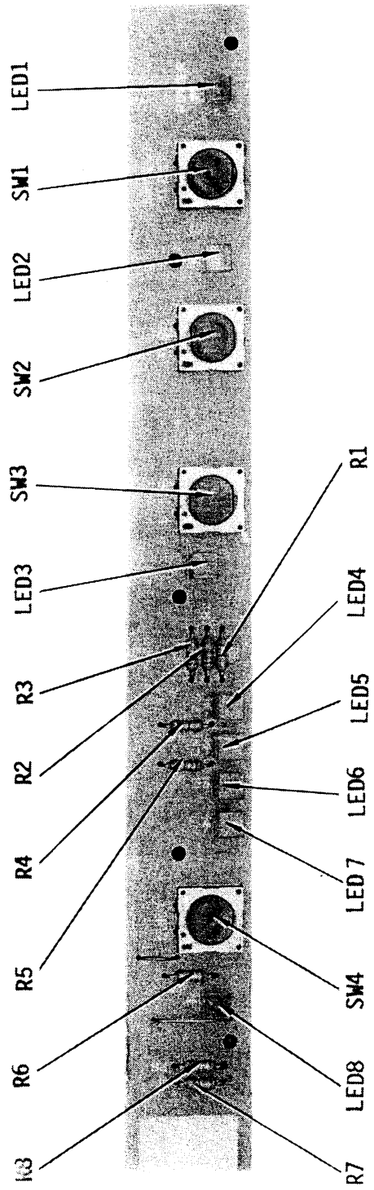
On the control panel the four Print Style LED's (10, 12, CND and PS) can indicate error status to help diagnose a printer malfunction. Use the chart to find the malfunction. X = Led Flashes rapidly • = Led not lit 0 = Led blinks.

10	12	CND	PS	
•	x	x	•	Serial interface buffer overflow
•	x	x	x	Paper Jam
•	•	•	0	Check sum error in firmware ROM
•	0	•	0	Check sum error in CG ROM
•	•	0	•	RAM check error
0	•	0	•	34V check error
•	•	0	0	Hardware error (I/O port timer)
•	0	0	•	Hardware error (Option PCB)
0	•	•	•	CPU error (stalling)
0	•	•	0	Spacing motor control error
0	•	0	0	Home position switch error

Select LED will light when the printer is on line and will blink when printer is out of paper. It will flash rapidly when printing stops due to hardware malfunction.

PARALLEL INTERFACE PIN ASSIGNMENTS

Pin No.	Signal	Direction	Discription
1	$\overline{\text{Strobe}}$	In	Active low signal strobe data to the printer
2-9	Data	In	Data lines transmit data in ASCII code
10	$\overline{\text{ACKNLG}}$	OUT	An active low pulse that indicates the printer received a data byte and it can receive another.
11	BUSY	OUT	Active High Signal to indicate one of the following: 1. Buffer is full 2. Printer is initializing 3. Printer is deselected 4. Printer has fault 5. Data is received
12	Paper Empty	OUT	Line status changes to logic high when printer is out of paper.
13	SLCT	OUT	Status line goes high when printer is selected.
14	$\overline{\text{AUTO FEED XT}}$	IN	When this line is low the printer performs auto line feed after each line.
17	Frame Gnd		
18	+5V		5V Power Supply
19-30	Signal Gnd		
31	$\overline{\text{Input Prime}}$	IN	When this line is logic low, it initialize the printer.
32	$\overline{\text{Fault}}$	OUT	This line is logic low when: - Printer is out of paper. - Printer is deselected. - Printer is in a Fault state.
33	Signal Gnd		
36	$\overline{\text{SLCT IN}}$	IN	Fixed Low



CONTROL PANEL BOARD

MISCELLANEOUS ADJUSTMENTS

PRINT HEAD GAP ADJUSTMENT

Remove top cover and ribbon cartridge. Open rear cover and center the right and left tractors. Remove Print Head, remove card guide from the Print Head, then install the Print Head back in the carriage assembly. Set the copy control lever to position 2. Move the Print Head to one end of the anvil and measure the gap between the Print Head and anvil. It should measure between 0.0146 and 0.0169 in. (0.37 and 0.43mm) and should be the same at both ends of the anvil. If the gap needs to be adjusted loosen the 4 screws securing the anvil. Using a nut driver, turn the eccentric bushings. When the correct gap is obtained, hold the bushing in position while tightening the screw, then tighten the screws holding the eccentric bushings. Remove Print Head, install card guide on Print Head and replace Print Head. Install ribbon cartridge and top cover.

FIRST PRINT POSITION ADJUSTMENT (HOME POSITION)

This adjustment has to be performed if the printer indicates home position switch sensing error. Turn on the printer and let the print head move to its initialized position. Turn OFF the printer and remove top cover. Using a caliper, measure the distance from inside the left printer frame to the left flange of the carriage assembly. Check the distance for 0.099 in. (2.51 ± 0.4mm). If the First Print Position needs adjusting, loosen the sensor assembly mounting screw, move the sensor bracket slightly in the direction the home positon needs to be moved. Tighten the sensor assembly mounting screw. Turn on the printer and let the print head move to its initialized position. If the first print position is not correct, perform the adjustment as many times as necessary. Let the printer print characters and check on the first print position. The difference between center line of the first print character and center line on the anvil is ± 0.04 in. (± 1mm) or less.

LINE DEFINITIONS

A0 THRU A14 ..... ADDRESS BITS 0 THRU 14
ACKNLG ..... ACKNOWLEDGE, DATA RECEIVED AT PRINTER
ALE ..... ADDRESS LATCH ENABLE
AUTO FEED XT ..... AUTOMATIC PAPER FEED
BUSY ..... BUSY, OFF LINE, DATA ENTRY, PAPER FEED, PRINTING
CE ..... CHIP ENABLE, ROM MEMORY
CLK ..... CLOCK TIMING PULSES
D0 THRU D7 ..... DATA BITS 0 THRU 7
DATA1 THRU DATA8 ..... DATA BITS 1 THRU 8
FAULT ..... ERROR STATE, PAPER EMPTY, COVER OPEN
GATE0, GATE1 ..... COUNTER ENABLE
HDL1 THRU HDL12 ..... PRINT HEAD DRIVING PULSES 1 THRU 12, LEFT SIDE
HDR1 THRU HDR12 ..... PRINT HEAD DRIVING PULSES 1 THRU 12, RIGHT SIDE
HEAD TEMP ..... PRINT HEAD MOTOR OVERHEAT PROTECTION
INPUT PRIME ..... INITIALIZES, CLEARS BUFFERS, RESETS PRINTER
INT1 ..... INTERRUPT REQUEST
LFA, LFB, LFC, LFD ..... LINE FEED MOTOR DRIVING PULSES
OE ..... OUTPUT ENABLE
OPT IN ..... OPTION INPUT
OPT OUT ..... OPTION OUTPUT
OUT0, OUT1, OUT2 ..... COUNTER OUTPUT PULSES
PA5 ..... PORT A, BIT 5
PC3 ..... PORT C, BIT 3
PE ..... PAPER EMPTY SENSOR
RD ..... READ(OBTAIN DATA)
RESET ..... RESET
RSTO ..... RESET OPTION
SELECT ..... SELECT LINE INDICATES ON LINE STATUS
SLCT IN ..... SELECT INPUT
SPA, SPB, SPC, SPD ..... SPACING MOTOR DRIVING PULSES
STROBE ..... STROBE PULSE FOR READ IN DATA
WE ..... WRITE ENABLE
WR ..... WRITE (PLACE DATA)

SELF-TESTS

SELF-TEST

The pinwriter performs several self-tests to help in diagnosing printer malfunctions.

Self-TEST 1

Hold down the feed button while turning the printer On. The printer prints a stored line to demonstrate print quality and accuracy. Running Self-Test 1 allows checking of printer line feed, spacing and ribbon feed operation.

SELF-Test 2

Hold down the Print Style Button while turning the printer On. The printer prints the model name, the firmware revision level and print-head test patterns and then prints a stored line of print styles. Running Self-Test 2 allows checking of printer line feed, spacing and ribbon feed operation.

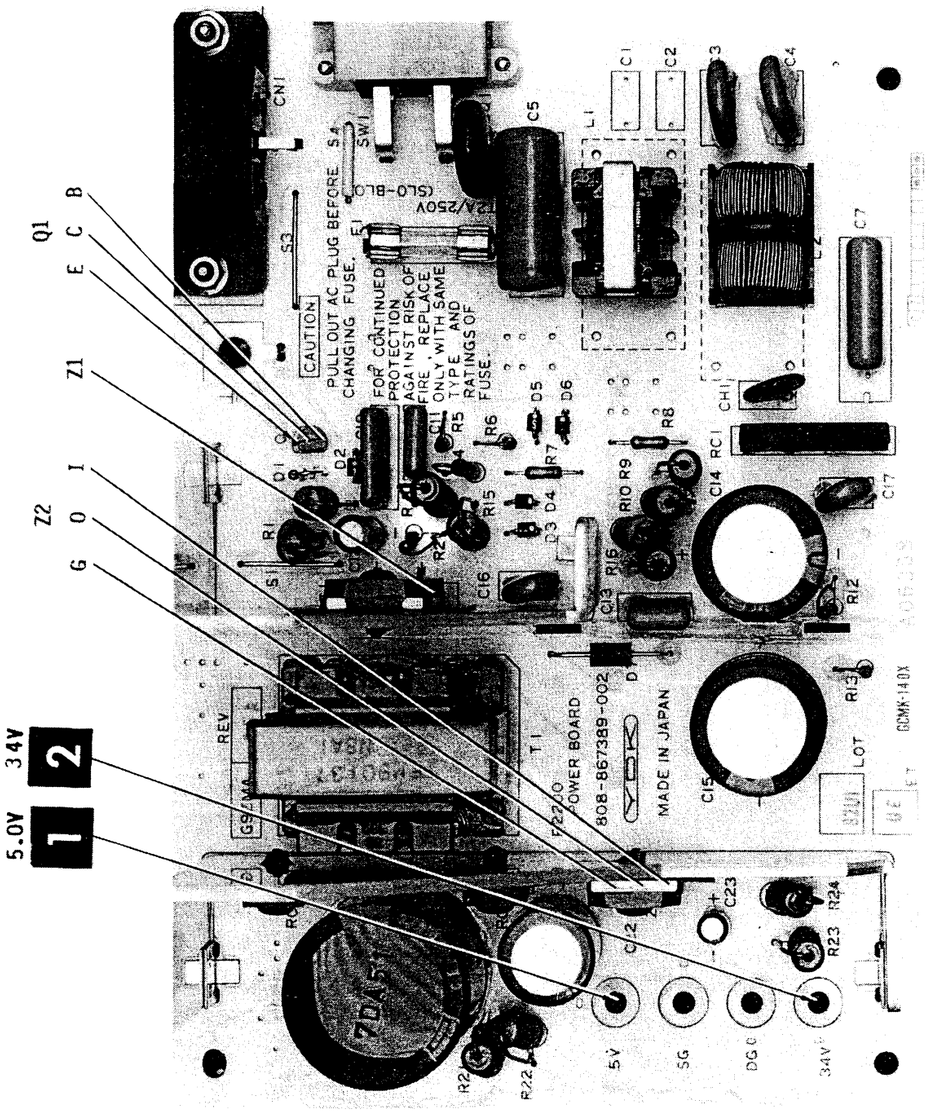
SELF-TEST 3

Hold down the Quiet Button while turning the printer On. The printer prints the model name and the firmware revision level, then prints received data in hexadecimal format.

TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

Equipment	B&K Precision Equipment No.	Sencore Equipment No.	Notes
OSCILLOSCOPE	1541A, 2120, 2125, 2160	SC61	
LOGIC PROBE	DP51, DP21		
LOGIC PULSER	DP101, DP31		
DIGITAL VOM	388HD, 2800 SERIES, 2900 SERIES	DVM37, DVM56A, SC61	
ANALOG VOM	114, 117, 177, 214		
ISOLATION TRANSFORMER	TR110, 1604, 1653, 1655	PR57	
FREQUENCY COUNTER	1803, 1804, 1805	FC71, SC61	
COLOR BAR GENERATOR	1211B, 1251, 1260, 1249	CG25, VA62A, NT64	
RGB GENERATOR	1260, 1249	RG67	
FUNCTION GENERATOR	3020, 3011A, 3026, 3030		
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44 PR-28(HV)	HP200 TP212	
TEMPERATURE PROBE	TP-28, TP-30		
CRT ANALYZER	467, 470, 480, 490	CR70	
DIGITAL IC TESTER	560, 550, 552		
CAPACITANCE ANALYZER	810, 820, 830	LC76, LC101, LC102	
INDUCTANCE ANALYZER		LC76, LC101, LC102	
TRANSISTOR TESTER		TF46	
FLYBACK-YOKE TESTER		LC76, LC101, LC102	



A Howard W. Sams CIRCUITRACE® Photo

NEC CP54 MODEL PINWRITER P2200

NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED

POWER SUPPLY BOARD

POWER SUPPLY BOARD
GridTrace LOCATION GUIDE

| | | |

MEMORY SETTINGS

MEMORY SETTINGS

Memory settings are read by the printer at power-on. These settings can be changed by the operator or by software commands. The printer responds to three setting menus as follows:

Print mode settings
Form Settings
Interface Settings

To check or change the current memory settings, press Select Button and hold it down and turn On power. The printer will enter the memory set mode. Factory memory setting is shown below.

PRINTER MEMORY SETTINGS

```
CURRENT PRINTER SETTING
  (CURRENT SETTINGS IS [   ])

    PRINT MODE SETTINGS (1 thru 6)
      1.  PRINT MODE POWER-UP
          [LQ10] DR10
      2.  LQ PRINT STYLE
          [COURIER], SUPER FOCUS, DCR-B, ITC
          SOUVENIR, OPT FONT
      3.  12 CPI DRAFT SETTINGS
          [DRAFT], HIGH SPEED
      4.  LANGUAGE CHAR SET
          [USA] FRA GER ENG DM1 SWD ITL SPA JPN
          NOR DM2 NET TUK
      5.  CHAR SET DEFAULT
          ITALIC [IBM(R)/STANDARD]
      6.  SHAPE OF ZERO
          [0] Ø

FORMS SETTINGS (1 thru 8)
  1.  FORM FEED LENGTH IN INCHES
      3  3.5  4  5.5  6  7  8  8.5  [11]
      11-2/3  12  14
  2.  SKIP OVER PERFORATION
      ON [OFF]
  3.  LINES PER INCH
      [6] 8
  4.  AUTO LINE FEED
      ON [OFF]
  5.  AUTO CARRIAGE RETURN
      [ON] OFF
  6.  BUFFER FULL AUTO LINE FEED
      [ON] OFF
  7.  SHEET FEEDER
      INSTALLED [NOT INSTALLED]
  8.  AUTO INSERT
      ON [OFF]
INTERFACE SETTINGS (1 thru 7)
  1.  MODE
      [PARALLEL] SERIAL
  2.  BUFFER CAPACITY
      8K [4K]
  3.  BAUD RATE SETTING
      150  300  600  1200  2400  4800
      [9600]  19200
  4.  CHAR LENGTH SETTING
      [8 BITS] 7 BITS
  5.  PARITY CHECK
      [NONE] ODD EVEN
  6.  DCD, CTS, DSR SIGNALS
      [ENABLE] DISABLE
  7.  COMMUNICATION PROTOCOL SELECT
      ETX/ACK     [X-ON/X-OFF]     X-ON/X-OFF
      REPETITION

CONTROL PANEL BUTTON FUNCTIONS
1. PRESS FEED / YES = MOVE TO NEXT SELECTION
2. PRESS PRINT STYLE / NO = CHOOSE MODE IN
                            MAIN NEMU
                          = CHANGE SETTING IN
                            A MODE
3.  PRESS QUIET / QUIT = EXIT AND SAVE
                         SETTINGS
                       = RETURN TO MAIN MENU

    EXIT ?

To change the current memory settings, use the
Control Panel.
```

1. Select Button: when pressed while turning On the printer to enter the memory set mode.
2. Feed Button: when pressed means "yes" and advance to the next selection.
3. Print Style Button: when pressed means "No" and choose another mode in the main menu and change the settings in a mode.

4 Quiet Button: when pressed the printer will exit and save the settings and return to main menu.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
	MAIN BOARD		
CM101	Filter		
L1	Ferrite Bead		
L2	Ferrite Bead		
L3	Ferrite Bead		
L4	Ferrite Bead		
L5	Ferrite Bead		
L6	Ferrite Bead		
L7	Ferrite Bead		
L8	Ferrite Bead		
L9	Ferrite Bead		
L10	Ferrite Bead		
L11	Ferrite Bead		
L12	Ferrite Bead		
L13	Ferrite Bead		
L14	Ferrite Bead		
L15	Ferrite Bead		
L16	Ferrite Bead		
L17	Ferrite Bead		
L18	Ferrite Bead		
XL101	Crystal		(12MHz)
	POWER SUPPLY		
F1	Fuse		2 Amp @ 250VAC Fast Acting
SW1	Switch		Power

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	NOTES
Z103	UPA1436H (uPA1436H)			SK3A3/5005A	
Z104,5	UPA1437H (uPA1437H)			SK3449/297	
POWER SUPPLY					
D1	3.3B1(ZENER)	NTE5005A	ECG5005A	SK5060/6240	
D2 THRU D6	S481				
D7	RU2C				
Q1	C2002L	NTE85	ECG85		
RC1	D3SBA40				
RC2	D5LCA20	NTE6240	ECG6240		
RC3	D5S4M				
Z1	STR11006				
Z2	3052V				

(1) Number on unit.
(3) Numbers and/or letters listed before the dash (-) were found on this device.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFGR. PART No.
	POWER SUPPLY	
C21	10,000 40V	

Items not listed are normally available at local distributors.

CAPACITORS

ITEM No.	RATING	MFGR. PART No.
	POWER SUPPLY	
C5	.47 250VAC 20%	
C7	.1 250VAC 20%	

Items not listed are normally available at local distributors.

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.
	POWER SUPPLY	
L1	Line Filter	
L2	Line Filter	

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	
	CHASSIS			
TH1	41.3K Temp Cold Sensor			
	MAIN BOARD			
RM1	Resistor Network 4700X4			
RM2	Resistor Network 4700X4			
RM3	Resistor Network 4700X4			
RM4	Resistor Network 4700X4			
RM5	Resistor Network 4700X4			
RM6	Resistor Network 4700X4			
RM7	Resistor Network 1500X4			
RM8	Resistor Network 1500X4			
RM9	Resistor Network 560X4			
RM10	Resistor Network 560X4			
RM11	Resistor Network 560X4			
RM12	Resistor Network 10KX4			
RM13	Resistor Network 10KX4			
RM14	Resistor Network 4700X4			

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	
	POWER SUPPLY			
CH1	Metal Oxide Varistor			
R1	1 5% 3W Metal Film		3W1D0	
R3	22 5% 3W Metal Film		3W022	
R9	30K 5% 3W Metal Film		3W330	
R10	30K 5% 3W Metal Film		3W330	
R11	30K 5% 3W Metal Film		3W330	
R14	1 5% 3W Metal Film		3W1D0	
R15	22 5% 3W Metal Film		3W022	
R16	30K 5% 3W Metal Film		3W330	
R21	1300 5% 3W Metal Film		3W213	
R22	1300 5% 3W Metal Film		3W213	
R23	1300 5% 3W Metal Film		3W213	
R24	1300 5% 3W Metal Film		3W213	
SQ1	Metal Oxide Varistor			

MISCELLANEOUS

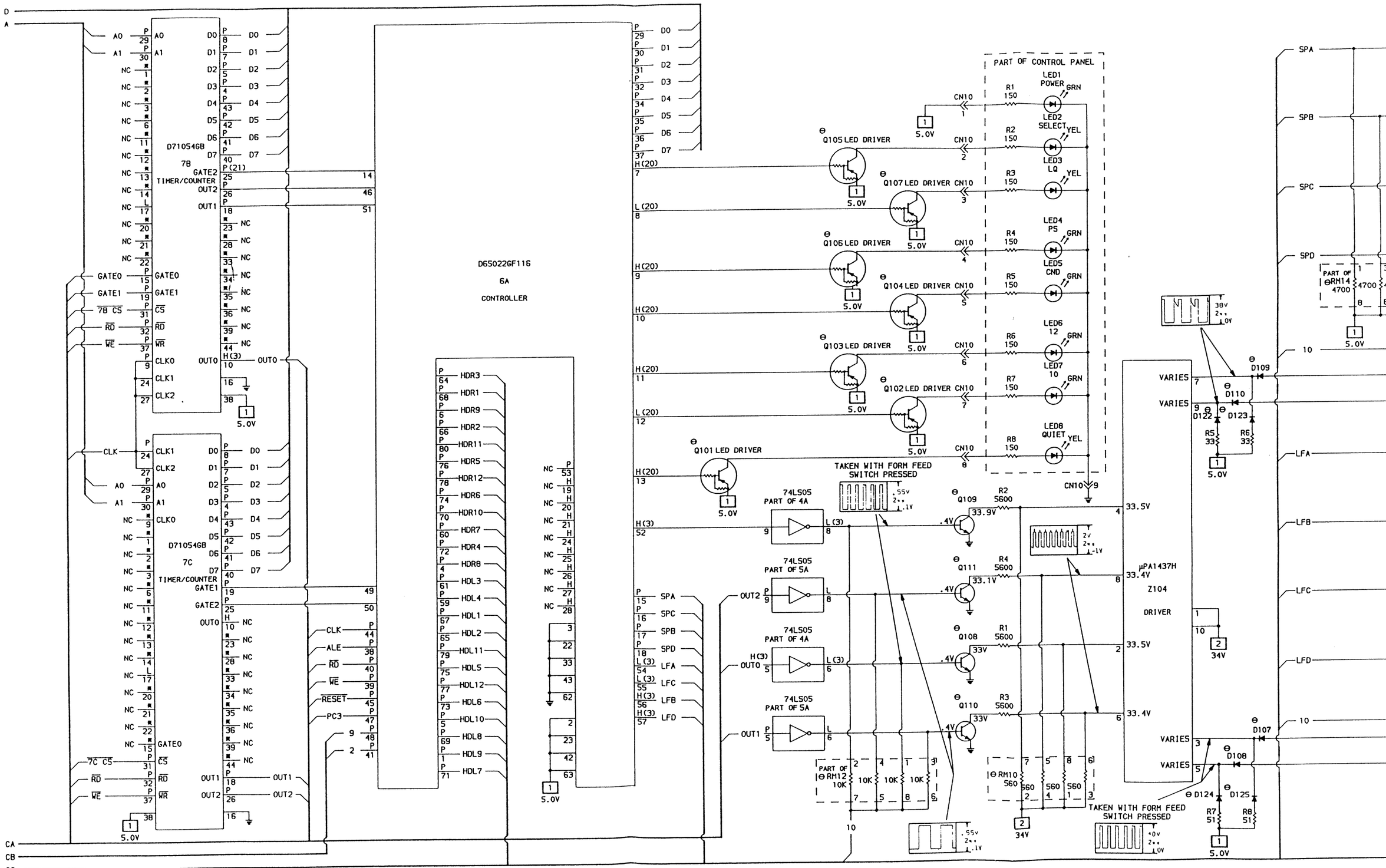
ITEM No.	PART NAME	MFGR. PART No.	NOTES
	CHASSIS		
M2	Sensor	136-814798-001-A	Paper Empty
M3	Motor	808-805208-001-A	Spacing Assembly
M4	Motor	808-805-209-001-A	Line Feed Assembly
M5	Print Head	136-206410-300-A	SSS-24 Assembly
P1	Cord	808-846004-010-A	AC Line, Polarized
	Control Panel	136-816415-300-A	Assembly
	Mother Board	136-434392-001-A	Assembly G9ZWWA
	Power Supply Board	808-867389-002-A	Assembly G9ZMA
	CONTROL BOARD		
LED1	LED		Power (Green)
LED2	LED		Select (Yellow)
LED3	LED		LQ (Yellow)
LED4	LED		PS (Green)
LED5	LED		CND (Green)
LED6	LED		12 (Green)
LED7	LED		10 (Green)
LED8	LED		Quiet (Yellow)
SW1	Switch		Select
SW2	Switch		Feed
SW3	Switch		Print Style
SW4	Switch		Quit

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

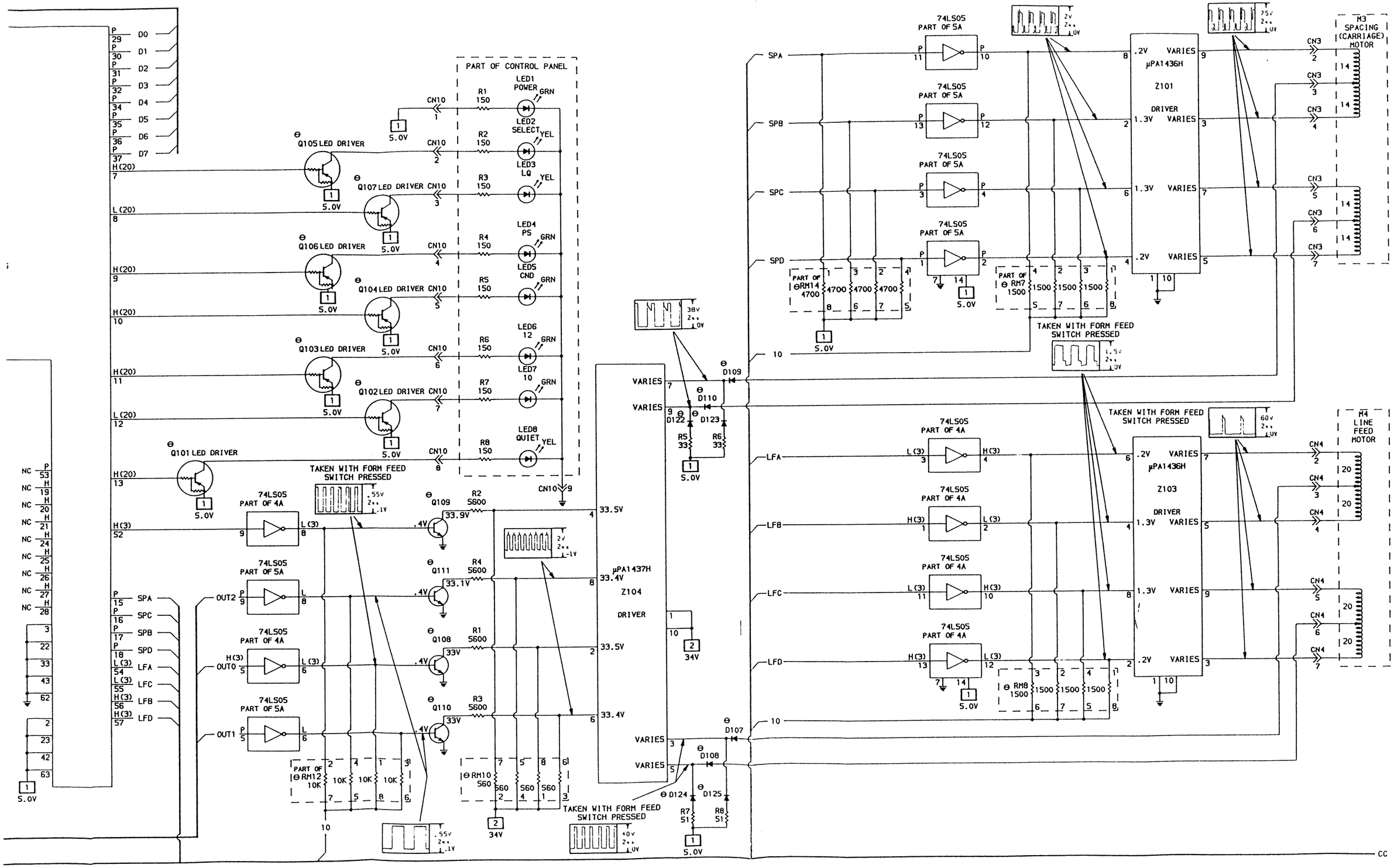
SEMICONDUCTORS (Select replacement for best results)

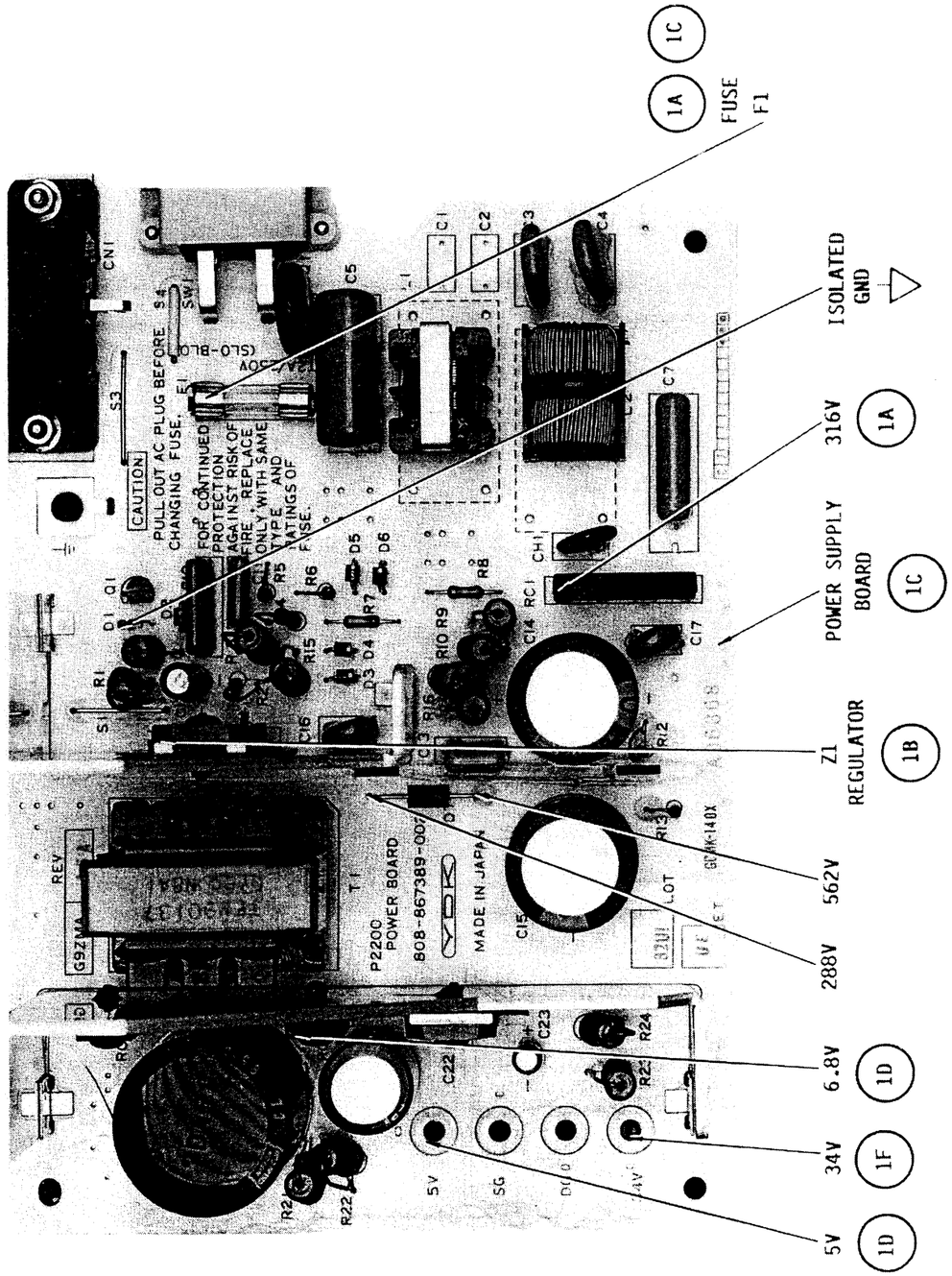
ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	NOTES
1C,1D	SIB1014D				
2C,2D	SIB1014D				
3C,3D	SIB1014D				
4A,5A	74LS05(SM)			SK7405	
6A	D65022GF116				
7B,7C	D71054GB				
7D	K1005(SM)				
7E	D7810HG				
8G	74LS04(SM)				
9B	TMM27256AD-20				
9C	D23C2000G				
9E	D65013GF216				
9G	74LS04(SM)				
10B	65256BLFP-15T				
10G	SN7405N	NTE7405	ECG7405		
D1 THRU D24	V281(1)				
D101 THRU D106	127Z(1)				
D107 THRU D118					
D119	A5-SAM(3)	NTE595	ECG595		
D120	332(1)				
D122 THRU D125	A13-SAM(3)	NTE593	ECG593		
Q101 THRU Q107	14-SAM(3)	NTE2415	ECG2415		
Q108 THRU Q111	L6-SAM(3)	NTE2408	ECG2408		
Q112	L33-SAM(3)	NTE2414	ECG2414		
Q113	L6-SAM(3)	NTE2408	ECG2408		
Q114,115	L33-SAM(3)	NTE2414	ECG2414		
Q116,117	M6-SAM(3)	NTE2409	ECG2409		
Z101	UPA1436H				
	[uPA1436H]				
Z102	UPA1437H				
	[uPA1437H]				



A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE™

Howard W. Sams & Co., Inc. 1989


PART OF CONTROL PANEL
LED1 POWER GRN
LED2 SELECT YEL
LED3 LQ YEL
LED4 PS GRN
LED5 CND GRN
LED6 12 GRN
LED7 10 GRN
LED8 QUIET YEL
R1 150
R2 150
R3 150
R4 150
R5 150
R6 150
R7 150
R8 150
CN10
Q105 LED DRIVER
Q107 LED DRIVER
Q106 LED DRIVER
Q104 LED DRIVER
Q103 LED DRIVER
Q102 LED DRIVER
Q101 LED DRIVER
5.0V
D0
D1
D2
D3
D4
D5
D6
D7
H(20)
L(20)
H(3)
L(3)
NC
SPA
SPB
SPC
SPD
LFA
LFB
LFC
LFD
TAKEN WITH FORM FEED SWITCH PRESSED
74LS05 PART OF 4A
74LS05 PART OF 5A
OUT0
OUT1
OUT2
Q109 R2 5600
Q111 R4 5600
Q108 R1 5600
Q110 R3 5600
33.9V
33.1V
33V
33V
.4V
33.5V
33.4V
μPA1437H
Z104
DRIVER
RM12 10K
RM10 560
34V
D109
D110
D122
D123
D124
D125
D107
D108
R5 33
R6 33
R7 51
R8 51
74LS05 PART OF 5A
RM14 4700
RM7 1500
RM8 1500
μPA1436H
Z101
Z103
1.3V VARIES
.2V VARIES
M3 SPACING (CARRIAGE) MOTOR
M4 LINE FEED MOTOR
CN3
CN4
CC



POWER SUPPLY BOARD

PRELIMINARY SERVICE CHECKS
PREVENTATIVE MAINTENANCE

ENVIRONMENT

Computers perform best in a clean, cool area that is below 80 degrees Fahrenheit and free of dust and smoke particles. Even though home Computers are not affected by cigarette smoke as much as commercial Computers are affected, it is better to mantain a smoke-free area around the Computer. Do not block cabinet vents of Computer, Monitor, Printer, or other power devices.

ELECTRICAL POWER

Variations in the line voltage can affect the Computer. Try to avoid these fluctuations by using an AC receptacle that is on a power line not used by appliances or other heavy current demand devices. A power-surge protector, power-line conditioner, or non-interruptable power supply may be needed to cure the problem. **Do not** switch power On and Off frequently.

KEYBOARD

Liquids spilled into the Keyboard can ruin it. Immediately after a spill occurs, disconnect the Computer power plug from AC power outlet. Then, if circuitry or contacts are contaminated, disassemble the Keyboard and carefully rinse the Keyboard printed circuit board with distilled water and let it dry. Use a cotton swab to clean between the keys. Use a non-abrasive contact cleaner and lint-free wipers on accessible connectors and contacts.

DISK DRIVES

Clean the read/write heads of the Disk Drives about once a month or after 100 hours usage. Use only an approved head cleaning kit.

Handle carefully to preserve proper disk head alignment. A sudden bump or jolt to the Disk Drives can knock the disk head out of alignment. If Disk Drive must be transported, place an old disk in slot and close door during transport.

Store disks in their protective covers and never touch the disk surface. Observe the disk handling precautions usually found on the back of disk protective covers.

PRINTERS

Carefully vacuum the Printer regularly. Wipe surface areas clean using a light all-purpose cleaner. Do not oil the machine. The oil will collect abrasive grit and dust. The dust will act as a blanket. This can cause components to overheat and fail.

STATIC ELECTRICITY

Static electricity discharge can affect the Computer. In order to minimize the possibility, use anti-static mats, sprays, tools and materials, and maintain good humidity in the Computer environment.

MONITOR

Use an isolation transformer with any Monitor that does not come as part of the system since some Monitors use a HOT chassis (chassis connected to one side of the AC line). The face of the Monitor should never be left on for long period of time at high brightness level except when pattern is being changed periodically. Use caution when cleaning anti-glare screens, to preserve the glare-reduction feature.

SAMS™ Howard W. Sams & Co.
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co. as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co. by the manufacturers of the particular type of replacement part listed. 89CP19076 DATE 10-89

Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein.
© 1989 Howard W. Sams & Co.
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.
Printed in U.S. of America

CP54 NEC MODEL PINWRITER P2200

GENERAL OPERATING INSTRUCTIONS

SELECT BUTTON

Selects On-Line/Off-Line operation and suspends printing until pushed again to resume printing. If pressed and held while turning power On, the printer will print current memory switch settings.

FEED BUTTON

Activates Line Feed operation when printer is in Off-Line mode, advances the paper one line. If the button is held down the printer will perform Form Feed. It will advance the paper to first print line if a sheet feeder is used. It will initiate the Auto Load feature if a push tractor feeder is used. If pressed and held while turning power On the printer will perform normal mode self-test. In memory set mode, the Feed Button will change the menu or the settings.

PRINT STYLE BUTTON

Selects the print mode, Letter Quality or Draft, and selects the pitch, 10, 12, CND or PS. If Print Style Button is pressed and held while power is turned On the printer will perform all mode self-test. In memory set mode the Print Style Button advances the program to the next selection.

QUIET BUTTON

Selects between Quiet mode and Normal mode. If pressed and held down while power is turned On printer will perform Hex dump. In memory set mode, Quiet Button saves the memory switch changes and exits memory set mode.

LED ERROR CODES

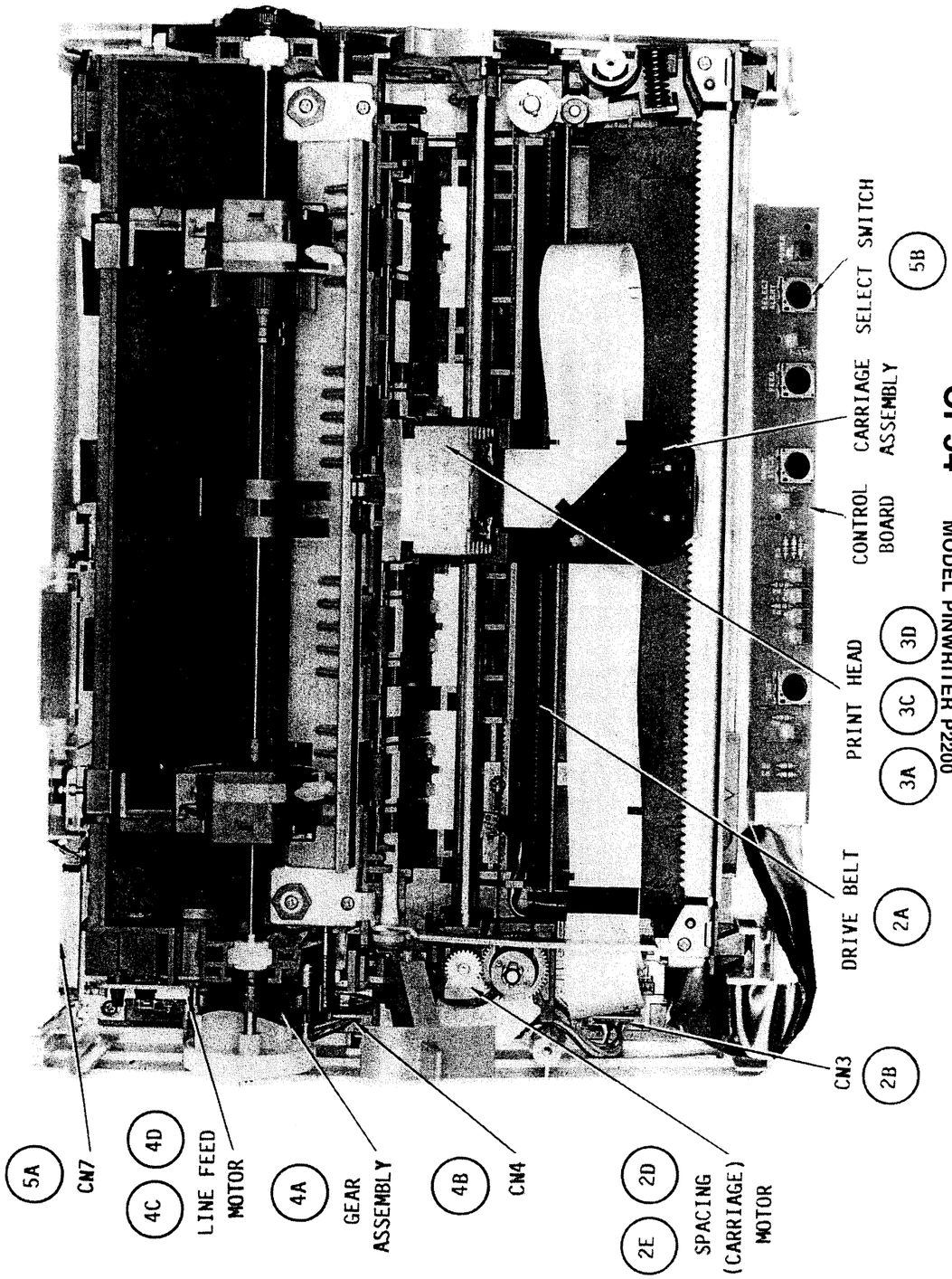
On the control panel the four Print Style LED's (10, 12, CND and PS) can indicate error status to help diagnose a printer malfunction. Use the chart to find the malfunction. X = Led Flashes rapidly • = Led not lit 0 = Led blinks.

10	12	CND	PS	
•	x	x	•	Serial interface buffer overflow
•	x	x	x	Paper Jam
•	•	•	0	Check sum error in firmware ROM
•	0	•	0	Check sum error in CG ROM
•	•	0	•	RAM check error
0	•	0	•	34V check error
•	•	0	0	Hardware error (I/O port timer)
•	0	0	•	Hardware error (Option PCB)
0	•	•	•	CPU error (stalling)
0	•	•	0	Spacing motor control error
0	•	0	0	Home position switch error

Select LED will light when the printer is on line and will blink when printer is out of paper. It will flash rapidly when printing stops due to hardware malfunction.

PARALLEL INTERFACE PIN ASSIGNMENTS

Pin No.	Signal	Direction	Discription
1	$\overline{\text{Strobe}}$	In	Active low signal strobe data to the printer
2-9	Data	In	Data lines transmit data in ASCII code
10	$\overline{\text{ACKNLG}}$	OUT	An active low pulse that indicates the printer received a data byte and it can receive another.
11	BUSY	OUT	Active High Signal to indicate one of the following: 1. Buffer is full 2. Printer is initializing 3. Printer is deselected 4. Printer has fault 5. Data is received
12	Paper Empty	OUT	Line status changes to logic high when printer is out of paper.
13	SLCT	OUT	Status line goes high when printer is selected.
14	$\overline{\text{AUTO FEED XT}}$	IN	When this line is low the printer performs auto line feed after each line.
17	Frame Gnd		
18	+5V		5V Power Supply
19-30	Signal Gnd		
31	$\overline{\text{Input Prime}}$	IN	When this line is logic low, it initialize the printer.
32	$\overline{\text{Fault}}$	OUT	This line is logic low when: - Printer is out of paper. - Printer is deselected. - Printer is in a Fault state.
33	Signal Gnd		
36	$\overline{\text{SLCT IN}}$	IN	Fixed Low



CHASSIS-OVERALL VIEW

PRELIMINARY SERVICE CHECKS (Continued)

MISCELLANEOUS ADJUSTMENTS

PRINT HEAD GAP ADJUSTMENT

Remove top cover and ribbon cartridge. Open rear cover and center the right and left tractors. Remove Print Head, remove card guide from the Print Head, then install the Print Head back in the carriage assembly. Set the copy control lever to position 2. Move the Print Head to one end of the anvil and measure the gap between the Print Head and anvil. It should measure between 0.0146 and 0.0169 in. (0.37 and 0.43mm) and should be the same at both ends of the anvil. If the gap needs to be adjusted loosen the 4 screws securing the anvil. Using a nut driver, turn the eccentric bushings. When the correct gap is obtained, hold the bushing in position while tightening the screw, then tighten the screws holding the eccentric bushings. Remove Print Head, install card guide on Print Head and replace Print Head. Install ribbon cartridge and top cover.

FIRST PRINT POSITION ADJUSTMENT (HOME POSITION)

This adjustment has to be performed if the printer indicates home position switch sensing error. Turn on the printer and let the print head move to its initialized position. Turn OFF the printer and remove top cover. Using a caliper, measure the distance from inside the left printer frame to the left flange of the carriage assembly. Check the distance for 0.099 in. (2.51 ± 0.4mm). If the First Print Position needs adjusting, loosen the sensor assembly mounting screw, move the sensor bracket slightly in the direction the home positon needs to be moved. Tighten the sensor assembly mounting screw. Turn on the printer and let the print head move to its initialized position. If the first print position is not correct, perform the adjustment as many times as necessary. Let the printer print characters and check on the first print position. The difference between center line of the first print character and center line on the anvil is ± 0.04 in. (± 1mm) or less.

PRELIMINARY SERVICE CHECKS (Continued)

SERVICE CHECKS

MATCH THE NUMBERS ON THE INTERCONNECTING DIAGRAM AND PHOTOS WITH THE NUMBERS ON THE SERVICE CHECKS TO BE PERFORMED.

(1) POWER SUPPLY

(A) Check AC Fuse (F1), If open, check the Bridge Rectifier (RC1) for short.

(B) Check the Regulator (Z1) for short between pin 3 and any of the other pins.

(C) Replace Fuse (F1) and turn power On. If the Fuse blows again, replace the power supply.

(D) Check for 5V. If 5V is missing check for 6.8V at the cathode of Diode (RC3).

(E) Check the 5V regulator (Z2) for shorts.

(F) Check for 34V at the cathode of Rectifier (RC2).

(G) Check connectors for good connection.

(H) Check the Mother Board by substitution.

(2) CARRIAGE ASSEMBLY DOES NOT MOVE

(A) Remove power from printer. Move the Carriage Assembly manually by hand to make sure it is not binding. Check Drive Belt.

(B) Check connector CN3 for good connection.

(C) Check the waveforms at pins 30 and 31 of the CPU (7E). Check Crystal (XL101).

(D) Check the resistances of spacing motor windings. Check for 14 ohms for each winding.

(E) If resistances are not correct, check carriage (spacing) motor by substitution.

(F) If the spacing motor checks good, check Mother Board by substitution.

(3) PRINT HEAD WILL NOT PRINT

(A) Check Print Head face for contamination.

(B) Check Print Head Cable connectors CN1 and CN2.

(C) Check resistances of Print Head solenoids, check for 52.5 ohms for each solenoid.

(D) Check the print Head by substitution.

(E) Check Mother Board by substitution.

(4) LINE FEED WILL NOT OPERATE

(A) Check gear assembly for free movement.

(B) Check connector CN4 for good connection.

(C) Check resistance of Line Feed Motor windings, check for 20 ohms for each winding.

(D) Check the Line Feed Motor by substitution.

(E) Check Mother Board by substitution.

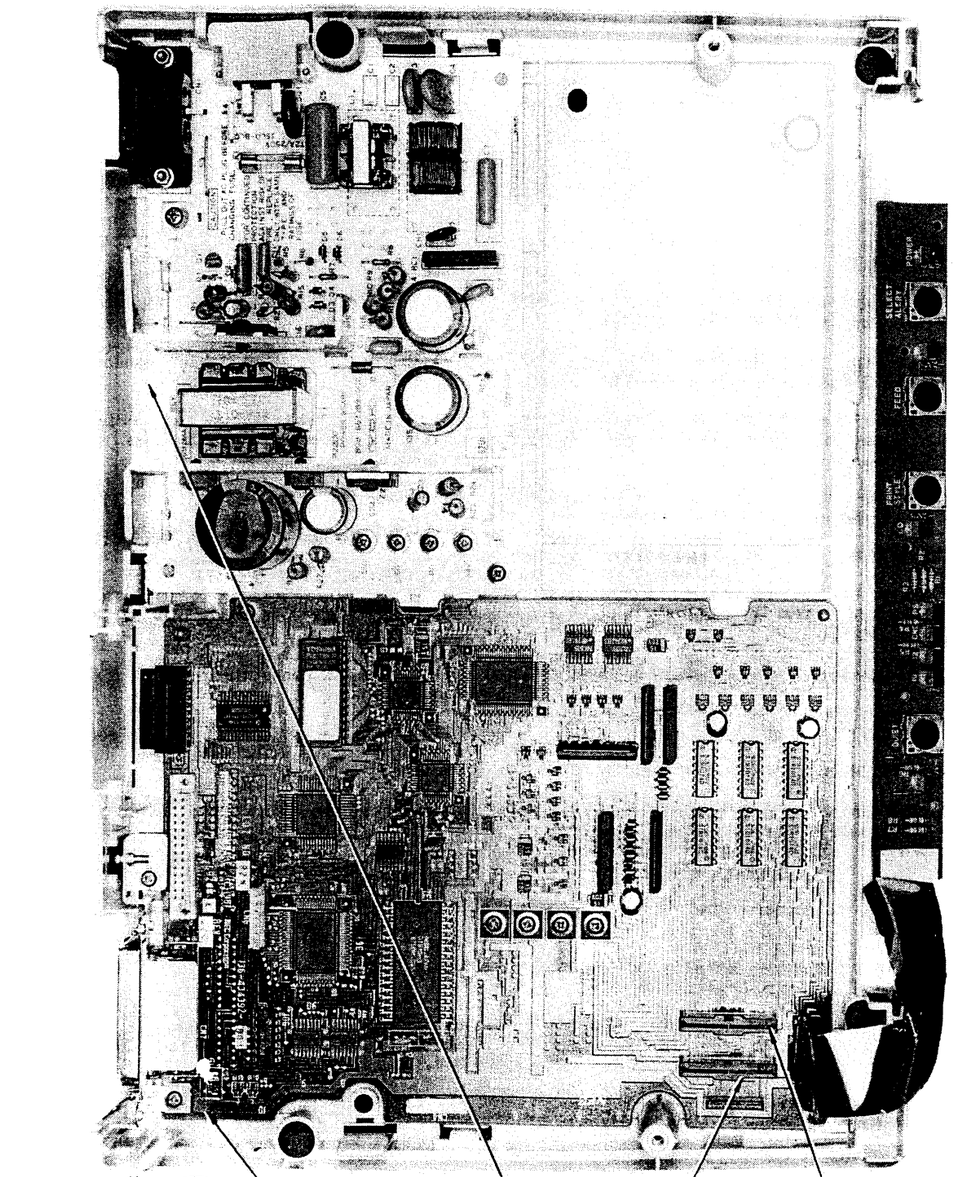
(5) PRINTER WILL NOT ACCEPT DATA

(A) Check connector CN7 and Interface cable.

(B) Check Select Switch by pressing it once, the Ready Light should come On, pressing it again should turn Ready Light Off.

(C) Check ROM IC (9B) by substitution.

(D) Check Mother Board by substitution.



CHASSIS-BOARD VIEW

DISASSEMBLY INSTRUCTIONS

TOP AND MIDDLE COVER REMOVAL

Open top cover by lifting it up and out from the printer. Pull off the feed knob, loosen two screws on the middle cover and lift off the middle cover.

CONTROL PANEL ASSEMBLY REMOVAL

Remove top cover and middle cover, loosen the screw that secures the cable shield. Pull up both ends of connector lock CN10, and remove cable out from connector. Lift off control panel assembly while pushing backward at both ends of the panel assembly.

PRINT HEAD REMOVAL

Remove top cover and remove ribbon cartridge. Move the carriage assembly to the center. Press down on the top right-hand corner of the clamp lever, unlock the clamp lever by pulling it to the right. Lift up print head. Pull up both ends of the connector locks CN1 and CN2. Remove cables from the unlocked connectors. Release cables from the unlocked connectors. Release cables from the clamps on the paper guide. Use a screwdriver blade and press the two locking tabs out as far as possible to release the connector from the carriage and lift the connector out of the carriage assembly. Remove card guide from Print Head, pull the tag piece of the card guide on the bottom of the Print Head to release the card guide from the position pins. Pull the card guide from the front of the Print Head.

MECHANICAL ASSEMBLY REMOVAL

Pull up connector locks CN1 and CN2. Remove the cables from the unlocked connectors. Disconnect connectors CN3, CN4 and CN6 from the Mother Board. Press the two locking tabs outward to release the mechanical assembly from the base. Lift the mechanical assembly out of the printer.

LINE FEED MOTOR ASSEMBLY REMOVAL

Remove the top and middle cover, remove the tractor dial. Disconnect connector CN4 from the Mother Board. Remove the screw that secures the Line Feed Motor. Unlock two locking tabs and remove the line feed assembly by sliding it outward.

CARRIAGE ASSEMBLY REMOVAL

Remove the top and middle covers, remove the Print Head. Remove the cover of the left gear pulley. While pushing the tension arm outward, remove the spacing belt from the left gear pulley. Remove the spacing belt from the driven pulley on the tension arm. Remove two mounting screws securing the front stay, you may have to remove the clamp bracket. Lift up the front stay, pull the copy control lever upward. Lift the guide shaft out of the printer while sliding it to the right. Remove the guide shaft from carriage assembly. Remove the carriage assembly.

CARRIAGE MOTOR ASSEMBLY REMOVAL

Remove the mechanical assembly, remove the spacing belt from the left gear pulley. (See Carriage Assembly Removal). Carefully pull the carriage motor assembly to the left out of the mechanical assembly.

PIN FEEDER ASSEMBLY REMOVAL

Remove the middle cover and the Line Feed Assembly. Pull out the right and the left tractor assemblies. Use the edge of a flat narrow screw driver to release the right and left tractor bushings from the base frame. Remove the Pin Feeder Assembly by lifting it straight up and out of the Mechanical Assembly.

PLATEN ASSEMBLY REMOVAL

Remove the middle cover and the Print Head. Remove the clamp bracket by removing two mounting screws. Remove the Pin Feeder Assembly. Remove the mounting screws at both ends of the platen. Remove the platen from the frame by lifting the front side of the platen. Adjust the Print Head gap after replacing the platen.

MOTHER BOARD PCB ASSEMBLY REMOVAL

Remove middle cover, control panel assembly and mechanism unit. Remove four connector screws. Remove four attaching screws. Lift off the Mother Board PCB assembly.

POWER SUPPLY PCB ASSEMBLY REMOVAL

Remove middle cover, control panel assembly and mechanism unit. Remove four connector screws, remove two mounting screws and lift off power supply PCB assembly.